The Hunterian Lectures

ON

THE MORPHOLOGY AND VARIATION OF THE SKULL.

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LECTURE I.

Delivered on Feb. 22nd.

MR. PRESIDENT AND GENTLEMEN,—A moment's reflection will show that a singular and abiding interest lies in and around the skull, that portion of our poor anatomy which in life shelters in dark recesses the brain and sense organs, the things whereby we live and move and have our being; which after death possesses all the mystery proper to the emblem of mortality. Such a subject for inquiry and meditation must needs have created a great and remarkable literature which it is no surprise to find takes us back to Hippocrates himself whose contribution is of peculiar interest and value. He tells us that in wounds of the scalp the sutures of the skull are liable to be taken for fractures, an error he himself had committed. Celsus approves this candour, which he observes is "after the manner of great men, for whereas small men permit no detraction, to the great, a simple confession of error is only natural." After Hippocrates many writers of different race and in different ages were busily engaged in building up that Science of Systematic Human Anatomy which must surely be regarded as one of the most lasting and signal memorials ever raised to human industry and perseverance. In this subject the skull occupied a foremost place: its literature steadily grew at the cost of labour which for the most part posterity has neglected to recognise. The names of Herophilus, Vesalius, and Fallopius no more make up the list of these workers than the discovery of a torcular, a foramen, or a hiatus can be regarded as the outstanding successes of their respective careers. Here, as elsewhere, "Oblivion has blindly scattered her poppy."

Up to the year 1790 the work on the skull was purely descriptive. In that year the German poet Goethe saw the skull of a Jew in the cemetery at Venice and was greatly struck by certain resemblances which it bore to a vertebra. He elaborated the view that the skull was formed by the fusion of vertebræ in a letter to Madame de Herder; the letter, however, obtained no general publicity. Seventeen years later Oken arrived independently at a similar conclusion from an examination of the skull of a deer. On taking his chair at the University of Jena he gave his theory to the world. A fresh stimulus was thus given to workers at the skull and much ingenuity was shown in discovering homologies and in determining the number of vertebræ represented. The theory was particularly associated in England with the name of Sir Richard Owen. It was not allowed to pass, however, without criticism, which was forcibly expressed by Huxley in the Croonian lecture to the Royal Society in 1858. In this lecture he somewhat rashly affirms "it is no more true that the adult skull is a modified vertebral column than that the vertebral column is a modified skull." Within recent years the more precise embryological and morphological work of Gegenbauer, Kölliker, Froriep, and Gaupp has done much to reinstate in a modified sense the vertebrate theory, for there can now be little, if any, doubt that the posterior portion of the skull is formed from the fusion of vertebræ.

Turning from the morphology of the skull to the variation of the skull we shall find that it will open up the whole subject of evolution, a theory which is as old as Anaximander and Archelaus, and which on embryological and geological grounds is established beyond all possibility of doubt. The manner in which evolution has occurred affords, on the other hand, unwonted opportunities for speculation and permits of wide divergence of opinion. As evolution results from variation the theories of variation may be first briefly considered. They are three in number—viz., Lamarck's, Darwin's, and the mutation theory. Lamarck's theory states that if an animal by continual effort strives after a certain result, nature responds by producing a variation adapted to the desired end. An example may make it more clear. According to this theory the giraffe by constant attempts to reach the higher leaves of trees or the heron by repeated efforts to raise its body above the water in which it wades, have been so far abetted by nature that she has conferred upon them the long neck and long legs which are their most striking characteristics. The theory has the distinction of being the earliest and has the merit of recognising in nature a power which is capable of effecting adaptive variations. The error probably lies in the unnecessary and improbable assumption that the animal itself controls this power.

The Darwinian theory is one which according to a recent utterance of Dr. Russel Wallace is much misunderstood. This regrettable state of affairs seems to be due to the fact that its two chief exponents since Darwin's time—viz., Huxley and Wallace—are men of a widely different philosophic outlook. Huxley waged incessant war against "those barren virgins, the Final Causes." Wallace, on the other hand, always deeply imbued with a sense of the mystery of nature, may almost be said to be enamoured of them. Darwin's position seems to me to have been nearer Wallace than Huxley. The latter makes no allowance for purposive or adaptive variation. He accepts variation as the result of accident and finds an adequate explanation for the various forms of life in the action of natural selection upon these accidental variations. It should be clearly understood that natural selection cannot directly produce anything; it can only encourage or suppress. According, therefore, to Huxley's interpretation the whole world may be considered the direct outcome of accident—surely a strange theory in a world in which law, order, and intelligence silently yet ceaselessly appeal for full recognition, a world in which accident is of rare occurrence and of minor import. According to Wallace's interpretation variation must be regarded as due to the mysterious powers of life. If such be so—and I see no possible alternative—it then becomes a question whether the origin of species itself should not be ascribed to these same powers, the part which natural selection plays being of quite secondary and almost insignificant importance. Artificial selection does not seem to be dissimilar from natural selection; it may even be more rigorous and more ingenious, yet we know that artificial selection is not able to produce specific variations in even the lowest micro-organisms.

The third theory is chiefly associated in this country with the name of Bateson, on the continent with that of de Vries. It states that variation is not always slow and continuous but occasionally discontinuous, at which times we get so-called "mutations." According to this theory natural selection plays a minor rôle. The difference between Wallace's and Bateson's points of view is not, to my mind, fundamental. They each accept or imply a mysterious power in nature as the source of variation. Wallace, however, still retains natural selection as an adequate explanation of the origin of species. Without discussing these theories further I now propose to consider the skull, its morphological divisions and its variations, in order that you may see the lines along which and the principles according to which variation has occurred and so may arrive at your own conclusions as to which theory is most deserving of support.

I begin with a brief consideration of the human skull since no doubt it is the skull best known to the majority of my hearers. It may be divided into the following morphological divisions: (1) the brain capsule; (2) the sense capsules for the organs of smell, sight, and hearing; (3) the jaws; (4) the suspensorium of the jaws; (5) the hyoid arch; and (6) the cheek plate.

1. The most interesting features of the brain capsule are (1) the number of bones forming it; (2) the uneven upward slope of the median portion of the base; (3) the communication with the olfactory and auditory capsules through cribriform plates; (4) the discrepancy between the points where the cranial nerves arise, where they pierce the dura mater and where they leave the cranium; and (5) the base of the cranium ossifies in cartilage, while the vault ossifies in membrane. It might here be pointed out that, although the optic nerve leaves the orbit through a single aperture, it, like the olfactory and auditory nerves, passes through a

cribriform plate (the lamina cribrosa) as it enters the eyeball. In a paper on Sensation and the Unity of Structure of Sensiferous Organs Huxley makes no mention of these singular and interesting parallels. They probably indicate that the sense organs are compound in their origin, a view borne out by other structural features.

2. The olfactory differs from the other sense capsules in that it lies anterior to the cranium. It communicates anteriorly with the exterior through the anterior nares and posteriorly with the pharynx through the posterior nares; the former apertures are bounded above by the nasal bones, below by the premaxillæ; the latter apertures are bounded mesially by the vomers. These particular relations, as also the plication of the lining mucous membrane, will be found to be acquired very low down in the zoological kingdom and to be with very rare exceptions constant throughout. The orbit is surrounded by a ring of bones which secondarily take part in the formation of the cranium and nasal fossa, and which help to support the upper jaw. The auditory capsule lies deep, being separated from the surface of the skull by the cheek plate. The position of the sense capsules with respect to each other and with the cranium is remarkably constant and due to the following facts: (1) the olfactory mucous membrane in the lower forms of animals, such as fishes, can only be stimulated by the animal "pushing its nose into things," and as this is a procedure fraught with a certain amount of risk, the organ of smell is most conveniently situated at or near the extreme anterior end of the head; further, since smell and food are closely associated it is important that the nose and the mouth should be near each other; (2) the eyes being bilateral, protective, and of peculiar help in feeding are advantageously placed far forward and near the mouth; and (3) the ears, which it should be remembered, are balancing as well as auditory organs, and which in fishes, for example, are only represented by the internal ears of higher forms, and so only acted upon by vibrations conveyed through relatively compact tissues, are appropriately placed in a central position.

3. The upper jaw consists of a maxilla which includes a premaxillary element, two plates—viz., the palate, and internal pterygoid bones placed mesial to the maxilla, and a detached bone, the incus—the quadrate of fishes, amphibia, reptiles, and birds. The lower jaw consists of two portions, a primary and a secondary; the primary portion is continuous through fibrous tissue with the malleus, the os articulare of the lower vertebrata. The secondary portion is continuous inferiorly with the primary but passes upwards and outwards to articulate with the cheek plate.

4. The suspensorium which connects the upper jaw, the primary lower jaw, and also the hyoid arch to the skull is represented by the small stapes.

5. The hyoid arch is represented by the small cornu of the hyoid bone, the stylo-hyoid ligament, the styloid process, and a piece of cartilage (Reichert's) which in the fœtus continues the styloid process to the stapes.

6. The cheek plate, easily recognised in ganoid fishes, in stegocephalic amphibia and reptilia, extends over and hides from view in mammalia the auditory capsule, between which and the plate are included portions of the upper and primary lower jaws, and of the hyoid arch as well as the suspensorium certain muscles, vessels, and nerves. It is to be recognised in comparative anatomy by the feature that it always lies external to the quadrate bone, in fact in its inception it would appear to serve as a shield to the quadrate joint.

I now leave the human skull to trace the steps and to study the nature of the processes through which it has been evolved. The evolution of the vertebrata from the invertebrata was shown by Kowalevsky in 1866 to be through the ascidia. He found that though the adult ascidian, or sea-squirt, has a typical invertebrate appearance sufficiently explaining why for long it was classed among the molluscs, the larval ascidian is a distinct vertebrate possessing a notochord which supports a central nervous system in connexion with which definite sense organs are developed. In process of development the freely swimming larva, as though under the baneful spell of a Circe, sinks to the dark bottom of the ocean where its higher faculties decline and where it spends the remainder of its allotted span in a state of vegetative monotony. I mention the life-history of this lowly organism because it is convenient to hand and because I wish to emphasise the importance in considering variation of keeping the phenomena of retrogression equally in mind with those of progression.

Unlike the ascidian, the amphioxus, although it probably suffers some degenerative change in connexion with its sense organs, retains its notochord and vertebrate character throughout its life. It is in the larval ascidia and amphioxus that we find the beginning of a cranium in the form of a membranous sac inclosing the anterior end of the central nervous system.

The next step in the evolution of a skull is seen in the cyclostomata, of which I choose the petromyzon, or lamprey, as my example. Here we find in front of an elaborate branchial basket a series of cartilages among which can be identified a cranium with a single olfactory and bilateral ocular and auditory capsules. The jaws are absent or degenerate, the mouth being surrounded by an orbicular cartilage. Some doubt exists as to the relation of the cyclostomata to other craniata. Haeckel is quoted as saying that the difference between the lamprey and the fish is greater than that between fish and mammals. Although this may be so, a study of the development of the lamprey appears to show that its skull is formed according to the same plan as that of the other craniates. We have, for instance, a notochord with parachordal cartilages, in front of which lies a pituitary fossa surrounded by trabeculæ cranii. Moreover, two cartilages have been identified by Huxley and Kitchin Parker respectively, as representing the palato-quadrate and mandibular arches of higher forms. If this identification be maintained, we have, as Gaupp points out, reason for regarding the cyclostomata as degenerative derivatives of the gnathostomata. The most interesting feature of the lamprey's skull, apart from the single olfactory capsule, is the absence of any occipital region, the vertebral column beginning immediately behind the auditory capsules. This has led Fürbringer to distinguish in the crania of the gnathostomata two portions, a portion in front of the foramen for the exit of the vagus nerve and a portion behind; to the former he gives the name palæocranium, to the latter neocranium; he holds that the palæocranium is alone present in the cyclostomata.

Although, therefore, there are considerable differences between the skulls of living cyclostomata and gnathostomata, the differences do not seem to me to be fundamental, the crania in both cases appear to have been evolved along similar lines. In the case, however, of certain extinct fishes, such as drepanaspis and pterichthys of the Old Red sandstone rocks, a quite different plan seems to have been followed. These early fishes are of peculiar interest, for they afford good evidence of an early abortive attempt of Nature to produce craniata, as though Nature was feeling her way, herself undergoing an evolutionary process. If this appears a strange doctrine to those who only hold by a material evolution, I would reply that no one has proved, no one ever now is likely to prove, that matter itself is other than subjective.

I now pass to the true fishes, beginning with the lowest, the elasmobranchii, or the cartilaginous fishes. Here we find at once a highly evolved skull which constitutes a type from which all other skulls can be traced. Taking the morphological divisions already mentioned seriatim, we find: 1. The cartilaginous cranium incomplete above and in front, where it is closed by a membrane in the recent state. This membrane has the pineal gland in close relation to its under surface. A pituitary fossa is present in the otherwise even and horizontal base. 2. The sense organs are in their usual position, except that the olfactory capsules open on the ventral aspect; the olfactory nerves enter the capsule through a fenestrated membrane. The orbits deeply excavate the cranium on either side. In development the olfactory and auditory capsules are at first separate from the cranium. 3. The jaws are upper and lower, the posterior portion of the upper jaw furnishing the articular surface for the lower jaw and so containing the quadrate element. 4. The suspensorium varies; the upper jaw may be fused with the cranium as in the chimæroids, it may be strongly attached to it by groove and ligament as in the Port Jackson shark, it may be slung to the cranium through an attachment to the upper portion of the hyoid arch as in the dog-fish. 5. The hyoid arch reaches the cranium, its upper segment constituting the hyomandibular cartilage. 6. The cheek-plate is absent.

Before leaving these fishes it may be well to add that they have only ten cranial nerves, the spinal accessory and hypoglossal being absent. Moreover, the first, second, third, fourth, sixth, and eighth are, in their main relations and in their distribution, identical with the corresponding nerves in man himself; further, in the case of the remaining nerves, fifth, seventh, ninth, and tenth, the differences are of minor importance. The close relationship and communications between the fifth and seventh, the Jacobsen anastomosis between the seventh and ninth, are already evident. It is not a little singular that so very early Nature should have found an arrangement of nerves from which she has scarcely ever and only slightly departed.

Although from the remains of teeth, spines, and skin tubercles we know that elasmobranch fishes were very numerous during the Silurian, Devonian, and Carboniferous periods, we only rarely, on account of the imperfect calcification of their skeleton, obtain well-preserved specimens from the rocks. Dog-fishes, sharks, and skates were early represented; the chimæroids were not certainly present until the Jurassic period.

Leaving the cartilaginous fishes, I now pass to the teleostomi, or "complete mouthed," so-called because bone forms a complete border to their jaws. The term includes the ganoid and teleostei fishes. As the latter are of late date, not appearing until the Trias, whereas amphibia are already present in the Carboniferous period, they are obviously a late offshoot from the main stem of vertebrate descent and so of minor interest. The ganoids, on the other hand, are Devonian and in the direct line. The name "ganoid" was given to these fishes because of the brightness of their scales; it is applicable to three orders of the teleostomi—viz., the crossopterygii, the chondrostei, and the holostei, of which three orders polypterus, the sturgeon, and lepidosteus may be taken as living examples.

The most remarkable change which the skull has undergone in its transition from the elasmobranch stage to the ganoid is that a large number of dermal bones have been added which lie over and to some extent replace the still important and almost complete cartilaginous cranium. Some of these bones are clearly continuous with the scales or scutes constituting the "armour" covering the rest of the body; others, on the other hand, seem to have sunk beneath the surface and to be plainly homologous with bones occupying similar positions in the higher vertebrates. As the late Professor W. C. Williamson of Manchester showed in a very important paper in the Philosophical Transactions of the Royal Society in 1851, a similar histological process seems to underlie the formation of scutes, membranous and cartilaginous bones, and teeth. Although the dermal skull bones of the ganoids are very numerous and often extremely small, many of them are large and by their constant position and relation to certain parts can be readily seen to have homologies with the cranial bones of higher types. The base of the cranium is, for instance, supported by a strong parasphenoid reinforced anteriorly by two vomers, the vault is covered by large tabular bones, the clear prototypes of the frontals and parietals. The anterior nares are bounded by nasals and premaxillæ; the orbit is surrounded by bones, among which are those which will become the lachrymal and malar. The upper jaw is strengthened by premaxillary and maxillary plates, while ossification extends into the palato-quadrate cartilage and beyond, forming new pterygoid elements; the lower jaw may show dentary, coronary, splenial, angular, and supra-angular dermal plates, as well as articular and mento-Meckelian cartilaginous bones. Basi-occipitals, exoccipitals, and supraoccipitals make their appearance while the organ of hearing is inclosed in a series of periotic bones. The interorbital region of the cranium may be surrounded by a tube of bone, the sphenethmoid as in polypterus, or by two pairs of bones which have been rather unfortunately termed the orbito- and ali-sphenoids. The suspensorium may consist of two elements, a symplectic being added to the original hyomandibula, which still remains continuous with the hyoid arch. One of the most remarkable features, however, of the ganoid skull is the well-formed cheek plate which extends downwards from the cranium uniting anteriorly with the circumorbital bones and posteriorly with the operculum. It covers the suspensorium of the jaws. The variations which occur within the group chiefly concern the jaws and are attributable to different methods of feeding. The sturgeon and lepidosteus afford examples of jaw mechanisms as widely contrasted as is possible.

We thus find in the ganoid fish a form of skull which in many particulars and in marked degree conforms with that of later types. There are, however, important points of difference which will be considered in the two following lectures. Before, however, leaving the subject of the ganoid fishes I should like to emphasise the peculiar interest which attaches to them on account of their position on the main vertebrate stem. Of the three orders it is probable that the crossopterygii are the most central and the least specialised. These fish are to-day only represented by the polypterus which it is interesting to find possesses characters such as a persistent spiracle, a spiral intestinal valve, and a multivalvular conus arteriosus which link it on with the elasmobranch fishes, while by the form of its skull and by an air bladder which acts as an accessory respiratory apparatus it is a natural ancestor of the dipnoi.

Lastly, it may not be without interest to direct your attention to the fact that the few elasmobranch and ganoid fishes living to-day are the scanty survivors of a rich and varied fauna which alone upheld the cause of the vertebrata through the long Silurian and Devonian periods in a world in which the silence was only broken by the sound of the moving waters breaking on desolate and uninhabited shores.

LECTURE II.

Delivered on Feb. 24th.

MR. PRESIDENT AND GENTLEMEN,—In my last lecture I traced the evolution of the skull to the condition found in the ganoid fishes. I showed that in them a great advance is made through the addition of dermal and cartilaginous bones, many of which are clearly homologous with similarly situated bones of higher types. This homology is expressed, sometimes a little unfortunately, by the application of identical names. The regions of the skull which we shall see suffer most change in later developments are (1) the anterior portion of the cranium, the so-called sphenethmoid region; (2) the basis cranii where a strong dermal bone, the parasphenoid, is the main support; (3) the quadrate portion of the upper jaw; (4) the articular element of the lower jaw; (5) the suspensorium; and (6) the cheek-plate.

Before leaving the subject of the ganoid fishes it is of interest, in view of the next fish under consideration, to note that in some of the present-day survivors of the group—e.g., polypterus and lepidosteus—the air-bladder has taken on a secondary respiratory rôle in addition to its primary hydrostatic function.

THE DIPNOI.

We have evidence that towards the end of the Devonian period another class of fish is present along with the elasmobranchs and ganoids, a fish particularly noteworthy in its fossil state for the peculiar nature of its teeth, which have the form of corrugated plates. Such teeth are only now found in fish which breathe by gills and air vesicles and which are in consequence known as double breathers or dipnoi. The dipnoi are represented to-day by the ceratodus of Australia, the protopterus of Africa, and the lepidosiren of South America. The wide distribution of these interesting animals is in keeping with their importance as the connecting link between the water and land fauna. They live in the mud along the marshy banks of rivers and from this habit are known as mud fishes. Their skulls are of peculiar interest since side by side with certain features which they possess in common with elasmobranchs, are others which are confined to them alone among fishes, features which place them in certain respects even above the amphibia. In the dipnoi more than in the ganoids the cartilaginous cranium of the elasmobranch is retained. The upper jaw, as in the chimæroids, is fused with the cranium. On the other hand, the dipnoi are peculiar among fish in having posterior nares opening into the mouth; further, the upper vertebræ can be seen fusing on to the skull with the consequence that the spinal accessory and hypoglossal nerves are added on to the cranial series. The quadrate bone is a very strong bone in keeping with the powerful jaws and teeth. The cheek-plate is present in protopterus and lepidosiren in the form of a splint lying external to the quadrate and known as the squamosal; in the ceratodus the

plate is as well developed as it is in the chelonia, a wide space intervening between it and the cranium. It is probable that the living dipnoi are descended from a more heavily armoured type, such as the dipterus of the Old Red sandstone. Before leaving the dipnoi reference may be made to the light which they throw on the development of a land vertebrate fauna. Long before such a fauna existed we may believe the land with all its possibilities was in readiness for it. The great obstacle which Nature had to surmount was the provision of a respiration suitable to a life out of water. She overcame the difficulty by the aid of the air vesicle, an organ with which, as we have seen, she was experimenting in some of the ganoid fishes. It will thus be seen that in all probability the land fauna has come from the water fauna through the slime, in which every encouragement would be given to the development of a respiration other than by gills. A deep irony lies in the reflection that the large elasmobranch and ganoid fishes little thought as they pushed their small companions into the mud what a rod they were putting into pickle.

THE TELEOSTEAN FISHES.

The teleostean fishes form the vast majority of present-day fish, and, with the exception of the ray and the sturgeon, are the only fish with which we have any dietetic acquaintance. They are of relatively late origin, arising as an offshoot from the ganoids after the amphibia had already appeared in the Carboniferous period. They are thus not of supreme interest, since they are not in the main line of vertebrate descent. Despite this undoubted drawback they are, however, of considerable interest to the student of variation, for they exhibit almost all possible varieties of skull shape without, however, departure from type. The morphological elements of the skull already detailed can be readily recognised, while the knowledge of the way in which the upper jaw is formed of premaxillary, maxillary, palatine, pterygoid, and quadrate elements and suspended by a hyomandibula which may suffer subdivision acts as a very Ariadne thread guiding us through the seeming labyrinth of piscine craniotomy. The causes governing the variation of skull shape seem to be particularly the manner in which the fish feeds and the position in which it lies. The latter determinant is well seen in such flat fish as the plaice and sole, and affords an admirable instance of the way in which the shape of the body can influence the shape of the head.

Before leaving the fish mention is plainly due in any consideration of the subject of variation to the singular parallels which they exhibit to what obtains in land animals. We have, for instance, fish which are viviparous and oviparous. The mustelus, one of the elasmobranchs, actually possesses a placenta, umbilical cord and amnion, a placenta, moreover, which, as in mammalia, is constituted of a maternal or uterine and a fœtal or yolk sac portion. In pteroplatæa long filamentous processes grow from the mucous membrane of the uterus and pass through the spiracle into the mouth of the embryo. In that they secrete a nutritive fluid the fish may be said actually to suckle its young. After these striking parallels such common habits as the building of nests and the formation of cocoons, such common attributes as the possession of electric organs, poison glands, and phosphorescent lights are hardly worthy of more than passing mention. Perhaps a final reference is permissible to the peculiar habit of the butter fish which coils its body round its eggs, for here it may be we have the beginning of that protective maternal instinct which leads the hen to gather her brood under her wings, the prettiest scene in nature and the most attractive simile in literature.

THE AMPHIBIA.

The difficulty of respiration solved, we can readily understand that the earliest land vertebrata would have every opportunity to multiply and flourish. A singular interest attaches to this early fauna, which had literally discovered a new world. Of this fauna, however, we at present unfortunately possess no knowledge, the earliest amphibian forms which are known to us from the Carboniferous strata having already advanced far upon the way to the reptiles. These forms, so far as their skulls are concerned, are characterised by well-marked cheek-plates which roof over the lateral surface of the cranium and account for the name stegocephalia, "roofed heads," which has been applied to them. Their skulls possess a pineal foramen; slime tubes similar to those of fishes are found on the dorsal surface of their snouts. Many exhibit a remarkable complication of their dentine, from which they are known as labyrinthodonts. They are now extinct but are believed to be in the construction of their skulls most nearly related to the cæcilliidæ and among higher amphibia to ceratophrys dorsata, both of which are still more or less stegocephalic. It is important to remember that the common frog has largely from economical reasons come to be regarded as a typical representative of the amphibia, whereas in many respects it must be considered highly specialised.

The skull of the amphibia, it is not surprising to find, differs considerably from that of fishes—a difference to be associated with the alteration in the manner of living. The portion which suffers least change is the cranium; the base is supported by a strong parasphenoid, the anterior portion is surrounded by a short tubular bone, the sphenethmoid, both of which bones are to be found in ganoid fish, particularly in polypterus. The chief change is in connexion with the suspension of the jaws, for we find that the quadrate is directly attached to the cranium while the suspensorium now rendered free becomes as the columella secondarily related to a tympanic membrane. This improvement in the auditory mechanism is no doubt attributable to the air-conducted nature of the stimulus.

One of the most variable bones of the amphibian skull is the squamosal; in one respect, however, it is constant—viz., in its close relation to the quadrate bone. It well deserves the name given to it by Gaupp, the paraquadrate. It may, as in ichthyophis, form with the quadrate and jugal a complete cheek-plate. In amphibia generally, however, the cheek-plate by deficiencies possibly of economic origin becomes transformed into a series of arches inclosing the so-called temporal fossæ. These fossæ are even better marked in reptilia and particularly in sphenodon where we can distinguish a superior, a lateral, an epiparotic, and a hypoparotic fossa. Much emphasis has been laid upon these arches and fossæ as being characteristic of the reptilian skull but an examination of the skulls of amphibia will show that there is none of these arches or fossæ which cannot be found in the lower class. The superior fossa is present in tylototriton,[1] the lateral fossa is present in discoglossus pictus and ceratophrys dorsata, the lateral fossa and an almost complete superior fossa are found together in nototrema marsupiatum, and while a hypoparotic fossa is present in many, it is associated with an epiparotic fossa in racophorus maculatus. The arches and fossæ cannot therefore be said to possess any particular morphological value. The squamosal or paraquadrate seems to serve in most instances, if not in all, as a support or splint to the quadrate. Its close relation to the tympanic ring in many instances is suggestive of its possibly helping to support that structure, but this cannot be the case in such an animal as siren lacertina where a wide interval lies between the two. That it may, on the other hand, protect the tympanic ring and relieve the columella from pressure is more than probable.

It will be now convenient to consider the history of a few other bones. The parasphenoid, which appears in the ganoid fishes, is a very important bone in the amphibia, serving as the chief support to the cartilaginous basis cranii. Among reptiles it only attains importance in the snakes. Its disappearance seems to be associated with the formation of an interorbital septum and the consequent pushing back of the cranial cavity. Howes and Swinnerton have shown that it becomes replaced in the skull of the embryo sphenodon by ossification of the cartilaginous basis cranii to form the basisphenoid and presphenoid; it fuses with the former of the two bones. The vomer also appears in ganoid fishes and seems at first to supplement the parasphenoid in supporting the anterior portion of the base of the skull. In amphibia it is closely related to the posterior nares, but this relation is clearly secondary, for, as I have already said, the bone is found in the ganoids, whereas the posterior nares only appear in the dipnoi. In fish, amphibia, and sphenodon the vomer may bear teeth. The palate, also present in the ganoids, in which it passes from the basis cranii to the quadrate, becomes less important in the amphibia; in them it is quite secondary to the maxilla, to which it appears to serve as a support; it is occasionally

[1] The skull of this animal and of all other animals mentioned in these lectures can be seen either in the Museum of the Royal College of Surgeons of England or in the Natural History Museum, South Kensington.

absent. The pterygoid arises in ganoid fishes as a wing-like expansion from the upper jaw, and in one—viz., lepidosteus—it reaches and articulates with the cranium. In amphibia it is, on the whole, triradiate with a maxillary, cranial, and quadrate process; its purpose seems to be the support of the maxillary arch. In menopoma, which is characterised by a wide mouth, the pterygoid is flattened and tabular, and thus strengthens what would otherwise be the weak roof of the oral cavity. The palate and pterygoid may, like the vomer, bear teeth. These three bones will thus be seen to be primarily in close relation to the basis cranii; it is a relation which is retained throughout and which is readily recognised in the human skull. The morphology of the sphenethmoid is not easily determined. The bone appears in the polypterus among ganoids; it is present in all amphibia. It surrounds in a tubular manner the anterior portion of the cranium lying above the parasphenoid. The fore part of the bone is in close relation to, and to some degree encloses, the olfactory sac. In most reptiles the formation of an interorbital septum almost destroys the continuity existent between the anterior and posterior portions, the anterior part being represented by the prefrontal and ethmoid, the posterior part being laterally compressed to form the septum. Possibly, as Gaupp suggests, the upper border of this interorbital septum may with the later forward extension of the cranial cavity become the ala orbitalis of the sphenoid. One of the most remarkable features of the amphibian skull is the fact that, as in fishes, the cranial nerves only number ten, the hypoglossal nerve of higher vertebrates being the first cervical nerve of amphibia. The fact is interesting, since it suggests that the hypoglossal nerve has passed from the spinal to the cranial series of nerves in consequence of the union of the first cervical vertebra with the cranium. The question is, however, far from simple, for in the amphibia there is only one cervical vertebra. Again, although exoccipitals are present in the amphibian skull there is no distinct basi-occipital. In these respects it will be seen that the amphibian skull and skeleton are well below the reptilian, while in the absence of an eleventh and twelfth cranial nerve they are even lower than the dipnoi. The explanation of this last somewhat surprising state of affairs lies probably in the fact that the dipnoi and amphibia are related to each other through a common and remote ancestor whose cranial nerves only numbered ten, and that while in most respects the amphibia have advanced farthest, in one feature the dipnoi have surpassed them. The comparative absence of a neck and lack of odontoid process must be held largely accountable for this defective occipital development, since the growth and expansion of the occipital region are closely correlated with the presence of a moveable neck and the need of an area for the insertion of muscles. The peculiar nature of the occipital region of the amphibian skull renders the value of its approximation to the mammalian type in the possession of two occipital condyles, whereas reptiles and birds have only one condyle, almost if not entirely negligible. As already indicated, the cheek plate in the amphibian skull shows large deficiencies. It is represented by the squamosal and jugal bones. The squamosal is very variable in shape, possessing in certain instances clear and well-marked occipital, post-orbital, and maxillary processes. The jugal is, with the exception of tylototriton, absent in all tailed amphibians.

From an amphibian skull of a stegocephalic type it is not difficult to pass to the reptilian and mammalian condition. It would appear, however, that evolution progressed along two distinct lines; the first leads through the rhynchocephalia, of which with the single exception of sphenodon all are now extinct, to the dinosaurs, ichthyosaurs, plesiosaurs, and pliosaurs, on to the immediate ancestors of the chelonia, crocodilia, lacertilia, and ophidia of our present fauna. Somewhere from this important vertebrate stem, possibly from the dinosaurs, our bird fauna seems to have sprung. The other line leads through the anomodontia to monotremes and mammals.

SPHENODON.

A singular interest thus attaches to the sphenodon since it survives from so high an antiquity and forms so important a link between the amphibia and reptiles. Its low central position among vertebrates is shown by the presence of pineal foramen and eye which latter is apparently functional for some time after birth, by the occurrence of vomerine teeth, and by the fact that the maxillary teeth are not inserted in sockets. Its skull differs from that of all living reptilia in that the maxillary arch reaches backwards through the jugal bone to the quadrate and that the latter bone is apparently perforated by a large "quadratic" foramen. I say "apparently" because a study of the development of the skull has shown that the foramen lies between the quadrate internally and the so-called quadrato-jugal externally. In the complete condition of the maxillary arch the skull of sphenodon is shown to be closely related to that of the tailless amphibia and the dinosaurs. Further, in some of the latter—e.g., iguanodon—a "quadratic" foramen is also present, while it is interesting to note that in the flattened quadrate bone of ceratophrys dorsata—an amphibian—the central portion is markedly thinned, translucent, and almost perforate. The cheek-plate in the sphenodon skull is represented by the post-frontal, post-orbital, the squamosal, jugal, and quadrato-jugal bones. The latter is to be regarded as more closely associated with the squamosal and quadrate than with the jugal, a statement based upon the important paper already mentioned in which Howes and Swinnerton describe the development of the sphenodon's skull.[2]

Before leaving the sphenodon mention may also be conveniently made of the fact that Howes and Swinnerton have shown that the fibres of the hypoglossal nerve first leave the skull through four paired foramina, that these foramina are ultimately reduced on each side to two. This history suggests that the hypoglossal region of the skull is formed in sphenodon by the fusion of four or five vertebrate segments.

DINOSAURS.

The dinosaurs, or "terrible lizards," are perhaps the most remarkable animals that have ever lived. They attained an immense size; the diplodocus is known to have been 80 feet in length. Some were herbivorous, others carnivorous; some walked after the manner of quadruped animals, others had long hind legs upon which they stood in a marsupial-like attitude; many were heavily armoured. Despite, however, their widely different appearance it is interesting to find that their skulls are all of a single type, a type which is represented to-day by the small sluggish lizard-like sphenodon of New Zealand. Perhaps no more striking instance could be adduced of the way in which anatomical structure can survive through untold time and changed circumstances than the marked resemblance which obtains between the skull of the little sphenodon and the gigantic dinosaurs of the Secondary period.

LECTURE III.

Delivered on Feb. 26th.

MR. PRESIDENT AND GENTLEMEN,—In my previous lecture I stated that from the stegocephalic amphibia evolution progressed along two distinct lines, the rhynchocephalic or beak-headed and the anomodontine, so called from the anomalous dentition of the members of the series. The former had its origin in the Permian period and is best represented in England by the hyperodapedon of the Elgin Trias; the latter does not appear until the Trias, and although imperfect specimens of its representatives have been obtained from Elgin the best examples are from the Karoo formation (Trias) of Cape Colony.

REPTILIA.

Taking the rhynchocephalic line first we find that it leads through a long series of extinct species to living reptilia. Of these reptilia the chelonia appeared first before the end of the Trias; they were closely followed by the crocodilia, whereas the lizards and snakes are not definitely known until long afterwards in the tertiary period. It is of interest and may be of value to the morphologist to know that among reptiles the chelonia are oldest and presumably nearest the main line of vertebrate descent. Since amphibia, as their name implies, lived more or less indifferently in water and on land it occasions no surprise to find that the two main branches which sprang from them are associated with the two different environments. The geological evidence shows that the earliest reptilia were adapted to a life in water, while even to-day their living representatives with few exceptions show a marked preference for moist situations. It is more than probable that we here have some part of the explanation of their cold-blooded condition.

The skull of the reptiles is not very different from that of

[2] Transactions of the Zoological Society, vol. xv.

sphenodon. As in the latter, the cranium lies except in snakes and a few lizards further back than it does in amphibia. This condition is clearly correlated with the presence in reptiles of an interorbital septum. It also effects a change in the form and development of the parasphenoid, the anterior portion of which becomes unnecessary with the backward shrinkage of the cranium. It appears that the amphibia and snakes find it advantageous to have a strong flattened roof to their mouth anteriorly as well as posteriorly. We can understand the importance of such a condition to the snake from its known manner of feeding; to the amphibia from their peculiar method of breathing in which they raise the floor of their mouth, compress the air against the roof, and so produce a backward current to the lungs.

The reptilian skull which most resembles that of sphenodon is the lizard's. The temporal arches and fossæ are well represented with the exception of the maxillary arch which bounds the lateral fossa inferiorly and which is always absent. The pterygoid is more important and complicated than in amphibia; it sends a strong process upwards to the parietal region of the cranium and an equally strong process outwards to the maxillary arch; these processes become during development separate entities, the so-called epipterygoid and transverse bones. Their purpose appears to be the support of the upper jaw. Another process of the pterygoid passes inwards and articulates with the basipterygoid process of the basisphenoid. These basipterygoid processes are of importance since they are probably the beginnings of the alisphenoids of the mammalia. It is interesting to find that they are at first entirely extracranial and only become incorporated in the cranial wall as a result of cranial extension.

In sphenodon and reptilia we also see the beginning of a hard palate which is of variable construction. In sphenodon it is formed by the vomers, palate, and pterygoid bones; the latter take a large part in its formation, extending forwards to meet each other and the vomers in the middle line. In the chelonia it is formed by the premaxillæ, maxillæ, vomers, and palate bones; the pterygoid in them lies at the junction of the maxillary and palatine arches. In crocodilia we find a very long well developed palate which closely resembles that of mammals; it contains however a pterygoid as well as premaxillary, maxillary, and palatine elements; in this respect, however, a parallel is found in myrmecophaga jubata, one of the edentates. No attempt is made towards the formation of a palate in snakes and only rare and imperfect efforts in the lizards. The palate entirely absent in amphibia is thus seen to be slowly and somewhat tentatively evolved in reptilia. By its formation, which is to be correlated with a change in the method of respiration, the basis cranii becomes hidden and a new roof is formed for the mouth. Before leaving these bones it may be remarked that while vomerine teeth are only present in sphenodon, pterygoid and palatine teeth are retained in certain snakes and lizards. The cheek-plate, as in sphenodon, is largely broken down to form arches; it is, however, complete and well marked in certain turtles and tortoises in which a wide space intervenes between the plate and the cranial wall. In other reptiles it is represented by post-frontals, jugals, squamosals, and supratemporals. The exact homology of these bones in different reptiles and in amphibia has proved a very vexed question and one barren of results. It is not improbable that too high and equal a value has been set upon sutures, that a distinction should be made between sutures occurring within and outside a morphological unit such as I take the cheek-plate to be, that the former sutures should be regarded as of minor and even questionable importance, while the bones which they limit cannot be always deemed capable of precise homological adjudication. One of the most important features of the reptilian skull is the increase in size, strength, and importance of the quadrate bone, which is fixed to the wall of the skull by a strong parotic process, except in lizards in which a small squamosal intervenes and in snakes in which it is loosely but securely attached to the cranium by a strong squamosal—an adaptation to the large size which the mouth of the snake has sometimes to attain in the swallowing of its prey. Despite these changes the quadrate still retains its close relation to the tympanic membrane. Other features may be briefly mentioned. A basi-occipital is present, the spinal accessory and hypoglossal nerves belong to the cranial series, while a ring-like atlas and an axis with odontoid process constitute the anterior elements of the vertebral column. As already indicated, it is not unlikely that these features are correlatable. The mandible as in fish and amphibia is compound, comprising splenial, dentary, angular, supra-angular, coronoid, and articular elements.

BIRDS.

The bird's skull need not detain us long, for birds even more than reptiles are highly specialised and lie distinctly apart from the main line of vertebrate descent. The earliest bird which is known is the archæopteryx of the Jurassic period, whereas the remains of mammals are found in deposits of the earlier Trias. The bird's skull is, however, interesting in that we find the cranium rounded in a truly mammalian fashion, while the quadrate bone already lies under an overhanging squamous process of the temporal bone. This process, which in the hen unites with a post-orbital process, is, in my opinion, to be regarded as a portion of the cheek-plate, the other portion being represented by the jugal and quadrato-jugal bones. The birds are a late offshoot from the reptiles as is seen by the distinct reptilian characters of the earliest birds which possessed teeth, a wing in which three clawed fingers could be recognised and a long but not tufted tail. Before leaving the subject of the reptiles and birds it is worthy of note that although they are descended so differently from the mammals, their skulls seem to have been evolved along parallel lines. It is, therefore, not so ridiculous as it would appear to seek for homologies in their skulls. It should, however, be emphasised that it is perhaps not wise, it is perhaps asking too much from morphology, to attempt to build up a complete and precise series.

ANOMODONTIA.

Turning to the other line along which I said evolution progressed through the anomodontia to monotremes and mammals, we should expect to find it the more interesting, and no doubt it would be so, did we know all. Unfortunately, however, the line is both imperfect and obscure. The anomodontia form a class of somewhat heterogeneous members who will no doubt in future years be grouped differently. One of the most distinct members, possibly because its skeleton has been almost perfectly preserved, is the pariasaurus of the Karoo. It measured some 8 to 10 feet in length and stood about 2 feet high at the shoulder. It possessed a skull very like that of the stegocephalic amphibia of the Carboniferous period, with a pineal foramen on the vertex. Other anomodontia, known from the large size of their paired canine teeth as the dicynodonts, had beaks like turtles and other features which indicate a close relation to the chelonia. The members, however, most resembling mammals are the so-called theriodontia, which had a dentition of incisor, canine, and molar teeth arranged as in mammals, although in gomphognathus polyphagus the canine teeth are in the premaxillæ. Associated with this dentition we find a correspondingly similar palate consisting of premaxillary, maxillary, and palatine portions. It bounds inferiorly the posterior nares which are separated from each other by a vertical vomerine plate. Amphibian features are still seen in the pterygoids, in the wide and high cheek-plates, in the lateral, superior, and posterior temporal fossæ, in the general flatness of the skull, and in the composite nature of the mandible. The skull of cynognathus crateronotus is singularly mammalian-like in appearance. An interesting feature of the anomodontine skull, in view of what happens in the mammalia, is the small size of the quadrate bone.

MAMMALS.

The final link between the anomodonts and the mammals is furnished by the jaws of animals from the Rhætic and Jurassic beds. The jaws are no longer composed of several elements, they contain multi-tuberculate teeth, which bring them into close affinity with the young ornithorhynchus, probably the lower of the two members of the monotreme order. The monotremes are the lowest of mammalia, as is shown by their blood being colder than other mammals, by their mammary glands being devoid of nipples, and by the fact that they lay eggs. Their skulls are naturally of much interest. The great obstacle to a proper understanding of their cranium is due to the fact that the sutures show a marked tendency to early obliteration; only in very young specimens can the limits of the various bones be determined. The monotreme

skull is distinctly mammalian in all its morphological sections, the cranium is relatively large and rounded, the jaws and palate are of the usual type, the three auditory ossicles are in the tympanum. The only non-mammalian feature which is present is a persistent temporal arch; in the ornithorhynchus the arch is short and high, in echidna it is long and low. Its nature is best seen in the ornithorhynchus. It is formed by two processes, a superior and an inferior, which meet and are then prolonged forward into the zygoma. The cranial wall between the two processes is formed by an expansion from the petro-mastoid—the so-called pterotic process. This is the conclusion to which Van Bemmelen came after a study of several young specimens; it is a conclusion which is fully confirmed by a specimen in the Museum of this College. A slight further expansion of the cranium would bring the cranial wall against the temporal arch so effecting its occlusion; that this explains its absence in higher mammalia can scarcely be open to doubt.

To return to the morphological divisions of the human skull, I spoke of the upward direction of the basis cranii. This is to be associated with the formation of a new deep respiratory passage separated from the mouth by the hard and relatively horizontal palate. Where the basis cranii is also the tegmen oris, as in fish and amphibia, the basis is horizontal. The discrepancy in the sites of origin of the cranial nerves, the places where they pierce the dura mater and where they leave the cranium, is due to the inequality in growth of the cranial wall and brain. It is thought by Gaupp that the position of the apertures in the dura mater represents the positions of the apertures in the skull of an earlier type. The relations of the vomer, palate, and pterygoid bones are readily understood by the study of their morphology. The incus is probably the quadrate of the lower vertebrata, the malleus the articular element of the mandible. The cheek-plate may be divided into an anterior and a posterior portion; the former becomes the zygoma and possibly by degeneration the temporal fascia; the posterior portion can be again subdivided into an upper and a lower section. The upper section through expansion of the cranial cavity has become incorporated in the cranial wall; certain structures, such as the Gasserian ganglion and the geniculate ganglion now lying in the middle temporal fossa, possibly lay originally outside the cranium under cover of the cheek-plate. The lower portion of the plate persists as the external bony wall of the Eustachian tube, tympanum, and mastoid antrum. If the cheek-plate be accepted as a new morphological element in the skull it furnishes a striking instance of the persistence of anatomical structure, for we find it well developed in ganoid fishes and in ceratodus, in stegocephalic amphibia, in chelonia, in the anomodontia, while it is difficult to explain the presence of the reptilian arches except by its assumption. In all classes of vertebrata it can be recognised as a plate lying over the lateral wall of the cranium and in close relation to the quadrate.

I would now conclude with a brief consideration of the theories of variation previously mentioned, in the light of the study which I have made.

Perhaps no region of the body can so well furnish evidence of variation adapted to purpose as can the skull. We find in it the most admirable and ingenious devices—devices distributed with a lavish and equal hand through all classes of the zoological kingdom, devices which in the vast majority of instances create wonder and disarm criticism. This being so, it seems to me singularly illogical to attribute them to that chance which is properly represented as blind, helped though it be to the utmost by the pruning process of natural selection. If further proof were needed that living forms owe their birth to the operation of some unknown power in Nature, it is forth coming in the phenomena of parallelism, which clearly indicate that Nature working far from eratically progresses along old and well tried paths. Again, the manner in which many amphibia can regenerate amputated limbs indicates the existence in these animals of a creative and intelligent force of which they can be only dimly conscious. Spallanzani more than a century ago caused a salamander to regenerate no less than 647 bones in a period of three months. The varieties of variation may be classified as follows:—

1. Purposive.
2. Accidental. { Atavistic. / Teratological.

They are to be distinguished by the fact that whereas the former must have occurred simultaneously in a considerable number of animals in order to have persisted, the latter are sporadic and tend to quickly disappear. If now we admit the existence of this mysterious force there is no longer any necessity to give natural selection the prominent place it has recently occupied as the dominant force in evolution. We can judge its influence by comparison with artificial selection and, as already stated, the latter may be regarded as almost impotent.

Darwin finding natural selection inadequate to explain many problems in Nature, introduced the further theory of sexual selection, but here too recent research has done much to shake if not to shatter the Darwinian position. The highly attractive appearance of the male is recognised as low down in the animal scale as crustaceans, but the supposition that an æsthetic sense is present in the female crustacea is one at which we well may falter. Again, it has been shown by Mayer's experiments on moths that it is by smell and not by the appreciation of colour that the sexes are attracted to each other. The question of secondary sexual characters seems to me to be one of the most obscure in the whole of biology. It is very singular, for instance, that the male mammal should have nipples, for the mammary glands are not functional in any male, and their activity is dependent on pregnancy. It may be that each mammal is potentially bisexual; instances are known of ducks, pheasants, and hens which after a blameless existence as members of one sex have suddenly and mysteriously put on the secondary sexual characteristics of the opposite sex. It is possible that if one sex undergoes a marked development in one particular feature, as, for example, the female in the matter of mammary glands, the development is to a minor degree impressed upon the opposite sex, and that in this way the presence of nipples in the male may be explained. I make these references to sexual selection because I wish to show that it is far from being a simple question. In the present state of our knowledge it should be deposed to a minor position among the forces producing variation and evolution. If we are thus compelled to recognise a mysterious force as the *vera causa* of evolution, are we wise in endeavouring to conduct our inquiry further? For my own part, I have no hesitation in answering in the affirmative, for the question becomes psychological and the psychological is intelligible. I hold with Descartes that "we know more of mind than we know of body, the immaterial world is a firmer reality than the material."

As to the way in which this force works little is at present known. The most interesting feature about it is that if it does not exhibit an intelligence which is human in its nature, it acts in a way which the human intellect can follow and in some measure comprehend. I have already said that it appears itself to be undergoing an evolutionary process; the only alternative is to suppose that it finds difficulty with the material in which it works. We see it, for example, in the interesting ostracodermi feeling its way after a cranial type, later in the elasmobranchii it finds a form which serves as a basis for all skulls which come after. We saw, again, that for a long time the difficulty of a secondary respiration obstructed the steady progress of evolution. One of the most impressive facts which presents itself to a student of evolution is the enormous number of extinct animals, the apparently large and useless waste of animal forms. The explanation may be, however, that each of these animals has evolved to a marked degree some particular and apparently insignificant attribute, and that after such development Nature is able by combination of these separately evolved attributes to effect some important and remote variation. If this were the case, we could understand the reason for the presence of such animals as the dinosaurs, whose large and strange bones are from time to time recovered from the bowels of the insatiate earth.

It would also appear that the higher the position of an animal in the zoological scale and the longer it has persisted unchanged, the less easily does variation occur. Plants are, for example, much more subject to variation than animals. Nature never seems to have been able to play fast and loose with anatomical structures; restrictions seem to have grown more severe as the structures, through long persistence, became more deeply impressed. That Nature should act in this apparently human manner is not surprising, for human intelligence is her latest and highest achievement. It is not improbable that it is also her last. Whether we regard it from the physical, moral, or mental

point of view, evolution seems to have reached in man its final stage. While the vertebrate fauna was confined to the water we could readily understand that with all the possibilities of land and air, evolution had still an ample scope, but now the media may be said to be exhausted; air, land, and sea have received their appointed fauna. It is impossible to imagine man better adapted physically for the position which he has been called upon to fill. Morally our knowledge of what is right cannot undergo any higher development; we can only advance by bringing more into harmony, practice and precept. Nor do I think that mentally we are likely to improve; we will, no doubt, accumulate more facts, recognise, name, and even direct forces in nature of which we are at present ignorant, but whether we will pierce more the mystery of things, whether a human intellect will ever surpass that of Aristotle is a matter upon which I remain sceptical.

Omnia in mysterium abeunt, said an ancient writer. And who can gainsay him? Surely no one who has reflected on the great drama of evolution, no one who has ever turned from the mystery of human fate to that larger mystery of the great globe itself, spinning in fathomless space with unfaltering regularity and unfailing precision, illumined morning and night by the sun and the moon, washed twice a day by the waves of the encircling sea.

FOUR CASES OF VOLVULUS ASSOCIATED WITH HERNIA.

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IN the *Annals of Surgery* for April, 1900, I drew attention to a class of case in which intestinal obstruction is produced by volvulus but in which the existence of a hernia is largely instrumental in leading to the development of acute symptoms. Clinically the large majority of these cases are regarded as strangulated herniæ, whilst a much smaller number simulate reduction *en masse*. There are four well-marked groups, which may be briefly enumerated here. 1. The contents of the hernia or a part of them are twisted, the neck of the volvulus lying either within the hernial sac or at the hernial aperture. 2. A volvulus is present and its neck and some of the affected coils lie within the abdomen but a loop or coil belonging to the twist is engaged in the hernia. 3. A volvulus may be produced within the abdomen by the reduction of a hernia. 4. Volvulus may occur within the abdomen from some predisposing condition more or less directly connected with a hernia.

The first and second groups are the most important, for they include in all probability the greatest number of cases. The four recorded below belong to the second category and so did the two cases of my own which I described in the paper already referred to. But I have also met with cases which belong to the first group. One of these is recorded in THE LANCET of June 16th, 1900 (p. 1727), and another—a very remarkable one of torsion of the stomach, with strangulation of that portion of the viscus that had not entered the sac of a diaphragmatic hernia—in THE LANCET of August 6th, 1904 (p. 362). Another case which had points of resemblance both to the first and second groups but which belonged definitely to neither as they are defined above, has been quite recently met with in a remarkable instance of intraperitoneal hernia. It is intended to publish this case later as a contribution to the subject of intraperitoneal hernial sacs. It is sufficient here to point out that it was the volvulus which formed in connexion with the sac that determined the acute symptoms.

It may possibly be that these cases are not so frequent as my experience would suggest. They are, however, always grave, very often fatal, and are quite easy to overlook. If the existence of the volvulus is not recognised, or if when suspected it is not exposed and untwisted, a fatal issue may be regarded as certain. By putting these additional cases on record it is hoped that the existence of the conditions which they illustrate may be more fully appreciated. It is not intended in this communication to go fully into the subject of volvulus in association with hernia, but should the reader be interested and should he wish for further information he is referred to the original paper in the *Annals of Surgery*.

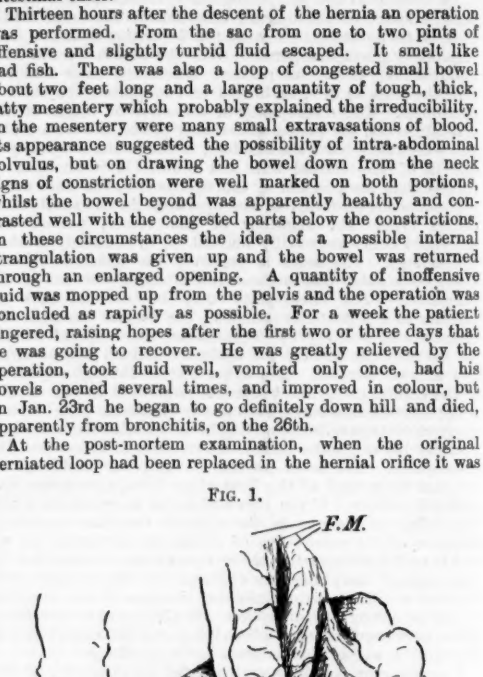
CASE 1. *Left inguinal hernia; intra-abdominal volvulus from left to right.*—The patient, a man, aged 60 years, had had a left inguinal hernia for 20 years which he kept up with a truss, but at 11 A.M. on Jan. 19th, 1902, during a bout of coughing, it came down and could not be returned. It increased rapidly in size and was the seat of great pain. The bowels were opened after it came down and there had been a good deal of vomiting.

On admission to the Leeds Infirmary there was found an acquired left scrotal hernia as big as a Rugby football. It was very tense, irreducible, and exceedingly painful. The abdomen was not distended. The pulse was 84 and fairly good and the tongue was moist. But the patient had hiccough and a very bad colour—his skin being of that gray earthy-looking tint which is sometimes seen in very grave intestinal cases.

Thirteen hours after the descent of the hernia an operation was performed. From the sac from one to two pints of offensive and slightly turbid fluid escaped. It smelt like bad fish. There was also a loop of congested small bowel about two feet long and a large quantity of tough, thick, fatty mesentery which probably explained the irreducibility. In the mesentery were many small extravasations of blood. Its appearance suggested the possibility of intra-abdominal volvulus, but on drawing the bowel down from the neck signs of constriction were well marked on both portions, whilst the bowel beyond was apparently healthy and contrasted well with the congested parts below the constrictions. In these circumstances the idea of a possible internal strangulation was given up and the bowel was returned through an enlarged opening. A quantity of inoffensive fluid was mopped up from the pelvis and the operation was concluded as rapidly as possible. For a week the patient lingered, raising hopes after the first two or three days that he was going to recover. He was greatly relieved by the operation, took fluid well, vomited only once, had his bowels opened several times, and improved in colour, but on Jan. 23rd he began to go definitely down hill and died, apparently from bronchitis, on the 26th.

At the post-mortem examination, when the original herniated loop had been replaced in the hernial orifice it was found that the lower portion of the mesentery with its attached bowel, comprising some six or eight feet of the lower ileum, had become twisted about the mesenteric axis. The twist was one half turn or through 180° and its direction

FIG. 1.



Case 1. Condition disclosed by necropsy. C., Cæcum. F.M., Folds of twisted mesentery. L.E., Left external ring. H.C., Herniated coil.

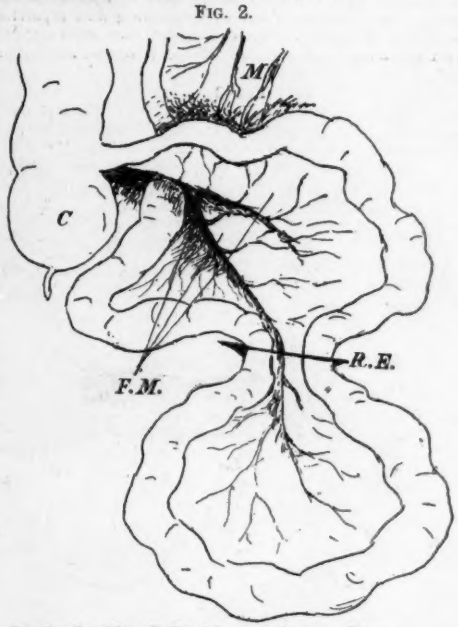
was from left to right. The lower ileum on its way to the cæcum in a roughly transverse direction lay beneath the upper ileum running almost vertically, and where the two crossed the mesentery was thrown into thick folds in a state of torsion. A loop of the bowel belonging to this twist had suddenly been thrust down into the hernial sac and this incident at once led to the development of acute symptoms. (Fig. 1.) The herniated intestine belonged to the highest portion of the twisted loop and as soon as it became well engaged in the rupture the mesentery belonging to it became stretched and taut, and acted as a broad powerful band pressing upon the lower segment of the twist and the folds of mesentery lying underneath it. In the first instance the venous circulation in the whole of the volvulus would no doubt at once be impeded. Meteorism would result and the hernial contents, as well as the intra-abdominal coils of the volvulus, would distend. Then the return of blood from the herniated portion would receive a second impediment as the pressure of the neck of the sac was brought into play by the distension of the bowel at that point. The hernial contents were therefore under much greater stress than were the other parts of the twisted loop, and the abrupt cessation of marked congestion at the neck of the sac was responsible for the error which led to the failure to discover the volvulus. As a matter of fact, the small extravasations of blood into the mesentery that first attracted attention, and which are unusual in ordinary cases of strangulated hernia, had a trustworthy significance. Similar extravasations were much more marked in those parts of the twisted mesentery that lay within the abdomen and nearer to the neck of the volvulus. The reduction of the hernia, though it completely relieved the signs of obstruction—as indicated by the cessation of vomiting and the passage of blood and fæces—did not release the twist. The obstruction to the circulation at the neck of the volvulus which had been called into action by the descent of the hernia continued but in a less aggravated form. Its effects were irregular and partial, some of the mesenteric vessels in the neck being more pressed upon and obstructed, no doubt, than others. This was evidenced in the condition of the bowel belonging to the twist. Though the greater portion of it—from the herniated bowel to the cæcum—showed evident signs of congestion, that part which lay beneath the band-like portion of the mesentery, already alluded to, was black and almost gangrenous in appearance for a number of inches and showed signs of being on the verge of perforation at more than one spot. It was adherent, too, to the parts around. Beyond, the coils which lay in the pelvis were deeply congested, but as the cæcum was approached a more healthy condition gradually supervened.

CASE 2. *Right inguinal hernia; intra-abdominal volvulus from right to left.*—The patient, a man aged 62 years, had had a right inguinal hernia for 11 years, but had not worn a truss latterly and had not even troubled to reduce the rupture. On Dec. 4th, 1902, at 5 P.M., whilst at tea, he felt pain in the lower part of his abdomen and in his rupture.

Shortly after admission to the infirmary on the same evening and when brought to the theatre for operation the patient was sweating and writhing about in agony, though an injection of morphine had been given previously to relieve the intense pain. There had been no vomiting. The hernial tumour was the shape of a very thick sausage, the portion lying in the inguinal canal being its largest part. The testicle was loosely suspended at its lower extremity. The tumour was tense and its neck was firm and resistant but there was an impulse on coughing. The pulse-rate was 95.

On the sac being opened blood-stained fluid escaped and 18 inches of small intestine with its mesentery were found in it. Both the latter were deeply congested and showed many ecchymotic spots. The finger passed through the ring with ease. The bowel on being drawn down from within the abdomen presented the same congested appearance. Volvulus, which had been first suggested by the appearance of the mesentery, was now thought probable. The incision was carried upwards through the parietes for two inches. When about eight inches of the outer limb of the coil (upper ileum) and about two feet of the inner segment (lower ileum) had been drawn outside, the neck of a volvulus was exposed. At each end the congested bowel was separated by a broad constriction from the healthy pale intestine beyond. The twist was seen to be a half turn (180°) from right to left. It was reversed, the bowel was returned, and much clear serum was drained from the abdomen. The operation was concluded in the ordinary manner. (Fig. 2.)

FIG. 2.



Case 2. Condition disclosed by operation. C., Cæcum. M., Mesentery above twist. R.E., Right external ring. F.M., Folds of twisted mesentery.

The only incident in the after-progress of the case to recovery was the passage of blood in the stools. It was considerable at first and it was nearly a week before it disappeared.

CASE 3. *Left inguinal hernia; intra-abdominal volvulus from right to left.*—The patient, a man aged 41 years, had had a reducible acquired left inguinal hernia for four years, but on the night of Oct. 31st, 1903, he failed to reduce it, and from that time he had suffered from severe vomiting and from constipation. There was pain in the hernia and in the left inguinal and hypogastric regions above the pubes.

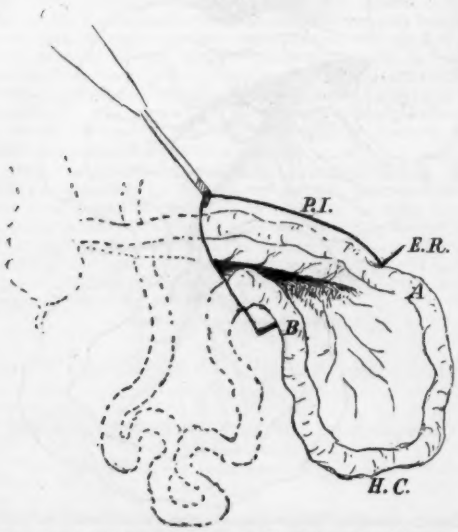
When admitted to the infirmary on Nov. 2nd the hernia was of the shape and size of an elongated cocoanut. It was soft and irreducible. Its neck was thick, firm, and solid. There was an impulse on coughing. There was also a right femoral hernia containing omentum. The abdomen was full and *very firm* but no tenderness could be made out. The tongue was dry and the pulse was 98.

Soon after admission the hernial tumour was opened in the usual way. Much turbid serum escaped, of which a large quantity came from the abdomen. About 12 inches of small bowel of a deep-red colour and wrapped in omentum were exposed. The finger was passed through the ring with ease. On pulling down both ends of the loop no sign of constriction was seen but the emerging bowel was of the same colour as that in the sac. There were no ecchymoses in the mesentery. Volvulus was suspected. The abdominal parietes were now incised directly upwards for two inches and then the condition seen in the undotted outline in Fig. 3 was exposed. The finger passed readily under the transverse roll of mesentery and bowel, which could be felt to be fairly taut. Traction upon the outer segment of the loop (A) was resisted and no further bowel could be drawn down, but traction on the inner segment (B) brought out coil after coil—all of the same deep-red colour and evidently from the pelvis. When two feet of bowel had been drawn out in this way no constriction had been reached. There could be little doubt that a volvulus similar in mechanism to Fig. 2 existed—viz., a half twist, through 180°, of the lower portion of the small intestine from right to left. The portion of the twist now brought into view was reversed and the segment A was passed well over to the right side of the abdomen. Before

the wound was closed it was ascertained that only omentum entered the femoral hernia, so this was not interfered with.

The patient's subsequent progress was slow. Though the bowels acted with the help of enemata and flatus passed naturally, yet he was troubled with vomiting and recurring distensions. For several days coils of intestine were mapped out on the abdominal surface. These were first noticed on

FIG. 3.



Case 3. Condition disclosed by operation. The dotted lines represent the supposed arrangement of the unseen coils. A, Outer segment of H.C. (herniated coil). B, Inner segment of same. E.R., External ring. P.I., Parietal incision.

Nov. 8th, but a week later he had got over his troubles and was convalescent.

CASE 4. *Right inguinal hernia; torsion of the great omentum.*—The patient, a man, aged 31 years, was admitted to the Infirmary 24 hours after the descent of a right inguinal hernia, which he had always controlled with a truss. Pain began as soon as the hernia came down and in two or three minutes it became as large as on admission. He vomited an hour later, but his symptoms were not very acute. The tumour was of the size and shape of a vegetable marrow about eight or nine inches long. Its thick sausage-shaped neck occupied the inguinal canal. The contents of the upper part of the sac were solid and those of the lower were fluid. There was an impulse on coughing and reduction was impossible.

At the operation, soon after admission, several ounces of bloody fluid and some blood clots escaped from the sac. The solid contents consisted of the great omentum intensely congested and infiltrated with clotted blood. There was no constriction at the neck of the sac and a finger was easily passed into the abdomen. Traction was made upon the omentum and its intra-abdominal portion emerged in a roll having the same engorged appearance as the part that had been present in the sac. The top of the congested roll was reached close to the attachment of the omentum to the transverse colon. The omentum was ligatured in portions and cut away close to the colon and just above the commencement of the engorgement. The case did well.

The explanation of the condition was this. A twist of the great omentum had taken place close to its attachment to the transverse colon, through 180°, from left to right. The left border of the omentum, which was much thickened and rope-like, lay over the right border. When the lower portion of twisted omentum was thrust down into the hernial sac the twist was rendered acute by the traction produced upon its main folds and by the inability of the omentum to alter its position. On examining the specimen the veins were like cords, being greatly distended and filled with clot. Much blood had been effused into the omentum and had collected in firm solid masses as big as Barcelona nuts. There were no adhesions between the twisted parts, and when unrolled the specimen showed a normally shaped great omentum with a crescentic border where it had been cut away from the transverse colon.

Leeds.

A CASE OF VOLVULUS OF THE ENTIRE SMALL INTESTINE, CÆCUM, AND ASCENDING COLON; OPERATION AND RECOVERY.

BY WILLIAM BILLINGTON, M.B., M.S. LOND., F.R.C.S. ENG.,

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VERY few instances of this form of volvulus are on record. Mr. Jonathan Hutchinson, jun., in a paper which appeared in the *Clinical Journal* of June 5th, 1907, was only able to collect ten cases, and of these only two recovered. It can only occur when the attachment of the ascending colon and cæcum to the posterior abdominal wall is extremely loose—i.e., in a floating condition. This is undoubtedly of congenital origin, and most of the cases of complete volvulus have been met with in subjects under 25 years of age. In all the cases recorded and in the one about to be described the third stage of the duodenum was also freely moveable and indistinguishable from the second stage.

In this form of volvulus the whole of the small intestine, the cæcum, and the ascending colon are rotated axially, the cæcum being carried behind the mesentery into the left side of the abdomen, being found in my case at the level of the spleen. The small intestine comes to lie to the right of the cæcum and some of the coils, becoming heavy with fluid, gravitate into the pelvis, tightening their mesentery, which crosses the displaced colon. The mesentery thus becomes a tight band which compresses the colon and effectually prevents the contents of the cæcum from passing on. This causes great distension, especially of the cæcum, since the small intestine can pour its contents into the cæcum as into a cistern from which there is no outlet.

A man, aged 41 years, came to see me on Oct. 1st, 1908. He was perfectly well until eight or nine years ago, when he noticed blood in his urine and passed a small calculus per urethram. About 12 months later he began to have frequent attacks of renal colic and passed numerous small stones by the urethra. At this time he was cystoscoped with a negative result. Three years ago, when on a visit to London, he was seized with a severe attack of renal colic and attended St. Peter's Hospital where he was examined by Mr. P. J. Freyer. Pus was seen escaping from the right ureter, but as an x ray examination failed to show the presence of a stone nothing was done. For the last two years there had been pus in every specimen of urine and he had had an attack of severe colic at intervals of eight or nine months, each attack being followed by the passage of a stone by the urethra. The last stone was passed at Christmas, 1907. For a fortnight prior to my seeing him the urine had been quite clear, but he had suffered from headache, pains in the limbs, and profuse sweating, and he had wasted. On the morning of his visit he had passed about a pint of what looked like pure pus per urethram. On four or five occasions during the last four years, at intervals of eight or nine months, there had been complete stoppage of the bowels, lasting for about two days. At other times the bowels were regular and gave no trouble. As these attacks were coincident with the renal colic no particular attention was directed to them.

The patient was a tall, thin man who looked haggard and emaciated. He brought with him a quantity of thick pus of acid reaction which he said he had passed that morning. The right kidney was very moveable and enlarged but not tender. The left kidney came down two or three inches below the costal margin and did not appear to be enlarged. Examination of the chest and abdomen revealed nothing of interest. As there were no indications for immediate interference and the patient was weak and ill he was advised to rest quietly at home for a month and then to present himself for a more detailed examination into the state of his kidneys, with a view to operation. On

account of the mobility of the kidneys an abdominal belt giving special support to the kidneys by means of rubber air-pads was ordered. This belt was probably instrumental in causing the subsequent attack of intestinal obstruction, since the right air-pad would tend to displace the cæcum to the left.

For some time the patient went on very well and his general condition improved considerably. Further, he expressed himself as having derived considerable comfort from the belt. Rather more than three weeks after his visit to me, he was seized with colicky abdominal pain and complete stoppage of the bowels. As this had occurred before, no great notice was taken of it. The pain, however, got worse, and two days later he began to vomit. A medical man was called in on the fourth day of the attack and various aperients and numerous enemata were tried with negative result. The pain was now so severe that the patient could not lie down but spent his time sitting in a chair and walking about. I was asked to see him on Nov. 5th, six days after the onset of the attack. He was sitting on the edge of the bed and looked very ill, the face being drawn and pinched. After taking a mixture containing opium the previous day the vomiting had entirely ceased and the pain was much easier, but at intervals he still had severe spasms of colic. The tongue was brown but moist, the pulse was 110, but strong and good, and the temperature was 98·4° F. Nothing whatever had been passed by the rectum for six days. The abdomen was moderately distended all over and on the left side, filling up the entire space between the costal margin and a horizontal line at the level of the umbilicus, was a tense rounded swelling which stood up strikingly above the general level of the abdomen. It was tympanitic on percussion and could not be moved. The maximum projection was several inches below the costal margin but the fingers could not be passed between the costal margin and the tumour. As it was late at night and the surroundings were unsuited for an abdominal section in the patient's own home, high turpentine enemata were ordered and instructions were left that if not better on the following day he should be moved into a nursing home for immediate operation. Delay seemed justified by the fact that both the patient and his medical adviser were satisfied that his general condition had improved since the preceding day. On the next day, as the obstruction remained unrelieved and the vomiting had returned, he was transferred to a nursing home and operation was carried out. The vomiting occurred at short intervals but only a small quantity of greenish fluid with a slight fæculent odour was brought up each time. The pulse-rate had increased to 126.

Operation.—An incision was made through the right rectus muscle for the reason that it seemed possible that the enlarged right kidney might in some way have induced the obstruction. On opening the peritoneum a quantity of slightly blood-stained fluid escaped. Many distended coils of small intestine were found beneath the incision and on opening these out the mesentery was seen to be twisted and greatly stretched. It was much congested and showed many petechial hæmorrhages. The tumour in the left side was found to consist of the enormously distended cæcum and first part of the ascending colon. Just to the right of the middle line the ascending colon was crossed by the tightly stretched twisted mesentery which completely occluded the bowel. The cæcum was punctured when a great volume of gas and 60 ounces of liquid fæces escaped. It was then found possible to lift the small intestines over to the left side of the abdomen and to bring the cæcum from behind the mesentery. While doing this the lumen of the small bowel near the duodenum was found occluded by a twist round the longitudinal axis of the bowel. This accounted for the fact that the vomit had been small in amount and practically non-fæculent. After operation a considerable quantity of brown fæculent matter was vomited. The third stage of the duodenum was freely moveable and directly continuous with the second stage. Finally, the abdominal wound was sewn up without drainage. To prevent a recurrence of the volvulus and to allow of an opening being easily made into the bowel in case of necessity a pouch of the huge flaccid cæcum was fixed by sutures to the anterior sheath of the rectus in the lower angle of the wound.

The patient stood the operation well. He vomited several times during the first 24 hours, the vomit consisting at first of strongly fæculent brown fluid and later of bile. Flatus was passed by the rectum after a few hours and the bowels acted naturally at the end of 48 hours. The pouch of cæcum was not opened and soon healed over, though some weakness of the scar and slight bulging on coughing persisted at that point. An uneventful recovery took place and at the end of a month he was able to return home feeling quite strong and better than he had been for two years. The urine still contained a moderate amount of pus and in all probability the right kidney will have to be explored in the near future.

This case is recorded on account of the rarity of the condition and the many interesting features it presented.

Birmingham.

TWO CASES OF VOLVULUS ASSOCIATED WITH HERNIA.

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CASE 1.—A man, aged 43 years, was admitted to the Leeds General Infirmary on July 20th, 1907. He had suffered from a right inguinal hernia for some years which had not previously given him any trouble. 48 hours before admission he was seized with pain in the hernia, which became swollen and irreducible, and in the abdomen. The bowels had not been moved and vomiting had been constant. On admission he was in a state of collapse, with cold extremities and a rapid feeble pulse. There was a large, tender, irreducible inguinal hernia on the right side, which gave no impulse on coughing. The abdomen was distended and tender, but it was possible to make out a tense swelling in the right iliac region extending upwards towards the umbilicus of about the size of the fœtal head. A diagnosis was made of a volvulus of the small intestine lying partly in the abdomen and partly in the hernial sac.

Under stovaine spinal anæsthesia an incision was made in the middle line below the umbilicus. There was a large quantity of blood-stained fluid, having a fæcal odour, in the abdominal cavity. Some 7 or 8 feet of the lower ileum were found to be twisted on its mesenteric attachment and lying partly in the hernial sac. The gut was of a deep plum colour with dark patches in places. The whole of the volvulus was excised and owing to the desperate condition of the patient Paul's tubes were inserted into the two ends; the tubes were surrounded with gauze and the abdomen was closed as rapidly as possible. Death occurred 36 hours later.

CASE 2.—A man, aged 68 years, was admitted to the infirmary on June 13th, 1908. He had suffered from a right inguinal hernia for many years. On June 12th the hernia became suddenly painful and swollen and could not be reduced. This was followed by vomiting which continued up to the time of his admission.

The case was thought to be an ordinary strangulated hernia and, under chloroform, herniotomy was performed in the usual way. On opening the sac, which contained a quantity of fluid, coils of normal small intestine were found lying side by side with other coils which were distended, thickened, and congested. There was no constriction at the neck of the sac, and on tracing the distended loops of gut upwards they were found to be continuous with other similar loops within the abdomen; these were withdrawn and it was then found that there was a volvulus of the small intestine involving two or three feet, the gut being twisted through one complete turn. The volvulus was untwisted and the intestine was returned into the abdomen. There was a large chronic vaginal hydrocele on the same side, and permission having been previously obtained the testicle was removed and the inguinal canal completely closed. Recovery ensued without incident.

The first of these two cases is of great interest in that it was possible to recognise the condition before operation and so to make an abdominal incision instead of one over the hernia, which would have been quite inadequate. It so happened that a short time previously I had re-read a reprint of Mr. R. Lawford Knaggs's paper in the *Annals of Surgery* for April, 1900, and recognition of the condition was therefore an easy matter. Both cases were of the same type, part of the volvulus lying in the hernial sac and part in the abdomen; in the first case many feet (probably about 8) of intestine were affected, while in the second case the volvulus

was comparatively small; on the one hand the gut was on the point of becoming gangrenous and on the other it was merely congested and distended.

It is possible that had I ventured to prolong the operation in the first case sufficiently to effect an anastomosis instead of inserting Paul's tubes the patient would have stood a better chance of life.

Leeds.

A SIMPLE METHOD OF ESTIMATING THE AMOUNT OF SUGAR IN GLYCOSURIC URINE.

BY T. J. WALKER, M.D. LOND., F.R.C.S. ENG.,
CONSULTING SURGEON TO THE PETERBOROUGH INFIRMARY AND DISPENSARY.

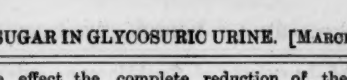
(*With Chart compiled by* W. ELBORNE, M.A., *Public Analyst, Peterborough.*)

IN this communication I propose to bring before the busy practitioner, who has little time for laboratory work, a simple method of using Fehling's solution which I have long employed and which enables me, with the help of the accompanying chart, to determine in from three to six minutes the quantity of sugar in the urine of a glycosuric patient. The method of adding the urine minim by minim to the copper solution when performing a quantitative analysis of diabetic urine is now generally recommended, and various modifications of burette apparatus are described, the principle of all being the same; perhaps the most rapid of these tests being that with Carwardine's apparatus. It is the simplicity of my method and the fact that it can be performed with the ordinary test tube, pipette, spirit lamp, and minim measure in a far shorter time which constitute its value to the busy medical man.

The test solution I use is Fehling's solution, which should be recently prepared. The fundamental fact on which all quantitative tests by this solution rests is that in order to reduce to the insoluble suboxide the oxide of copper which is contained in a definite amount of the solution a definite amount of sugar is required. This is usually thus stated in metrical figures: "10 cubic centimetres of the solution require 50 milligrammes of glucose" completely to discharge the blue colour of the cupric sulphate and to convert all the copper to the condition of the suboxide. This being the case, if we take a measured quantity of Fehling's solution and ascertain the exact amount of any urine required to effect this reduction we can by calculation determine the percentage of sugar present in that urine.

In his usual qualitative testing with Fehling's solution every medical man must have observed (especially in urines containing a large amount of sugar) that the copper suboxide is occasionally thrown down as a pure red (scarlet or crimson) deposit, instead of the usual yellow, drab, or orange precipitate which as a rule occurs in the ordinary method of qualitative testing. Many years since, when, I believe, the burette quantitative test had not been described, it occurred to me that if I could determine the conditions which led to this red precipitate I might utilise its occurrence as an index of the amount of sugar present. I therefore varied my methods of using the test until I found that by adding the urine drop by drop to boiling Fehling's solution, boiling for a few seconds as each drop of urine was added, I could (except with urines containing only a very low percentage of sugar) obtain the result constantly and not occasionally. I next established that the appearance of the blood-red precipitate corresponded with the complete reduction of the whole of the copper oxide to the suboxide and the discharge of all blue colour from the solution. I then adopted a definite amount of Fehling's solution—*half a drachm*—as being the easiest quantity to manipulate in an ordinary fair-sized test-tube, which with this small quantity could be well tilted to prevent the sudden formation of steam from exploding the solution over the mouth of the tube. By adding the urine minim by minim from a hand pipette[1] and noting the number of minims required to effect the complete reduction of the copper, I could calculate with sufficient accuracy for clinical purposes the amount of sugar in the urine under examination. (Fig. 1.) The essential point in manipulating this test is the

FIG. 1.



adding the urine drop by drop to the solution kept at boiling-point until the point of saturation is reached, this being indicated by the formation of the dense crimson or scarlet precipitate and the discharge of all blue colour. If we use either more or less than the exact amount of urine necessary we do not obtain the same result, and even if we ascertain the precise amount of urine required and add it in bulk instead of drop by drop the blood-red precipitate is not formed, probably owing to the quantity of urine cooling down the solution. With urines containing not more than 5 or 6 grains in the ounce (about 1·25 per cent.) the precipitate, when saturation is complete, is rather a red orange than a pure red; it is therefore well to add another drop when the red tinge appears, and if with this extra drop the colour is not intensified we know that the saturation was complete before it was added and that it must not be reckoned in the number of minims required to effect complete reduction of the oxide.

To confirm the accuracy of my observations and conclusions I called in the assistance of a professional chemist, Mr. W. Elborne, borough analyst of Peterborough, and he explains the sudden formation of the red precipitate by what is called in chemistry the "mass action" of the elements concerned; the strong affinity between the constituents when they meet, under favourable conditions, in the exact proportions necessary for their entire absorption in the new chemical compound leads to the almost impulsive combination which gives us the pure red suboxide. Having satisfied himself by various corroborating experiments that the method of using Fehling's solution which I have described was reliable as a quantitative analysis sufficiently accurate for clinical purposes, Mr. Elborne suggested that its utility to the busy practitioner would be greatly enhanced if the value of the reaction between each minim of urine and 30 minims of Fehling's solution, as indicating the percentage of sugar, were shown by a curved line on a graduated chart, and he prepared such a chart which is here produced in the form we have finally adopted (Fig. 2); it shows at a glance, without any calculation, the number of grains per ounce and the percentage of sugar, represented by each minim of urine consumed in the test. The figures below the heavy vertical lines on the chart indicate the number of minims of urine consumed in discharging the blue colour (and producing the pure red precipitate) from 30 minims of Fehling's solution. The figures opposite the heavy horizontal lines of the chart as well as those on the curved line crossing the chart indicate the percentage of sugar and the corresponding number (figures between brackets) of grains per fluid ounce. By percentage is understood "weight in volume"—i.e., grains per 100 minims.

Now, the reader who has followed me thus far will have noticed that I have occasionally spoken of drops, at other times of minims. The drop is not a uniform measure, and although for clinical purposes it may be used as though it were a minim it is not sufficiently accurate. But the drop is the measure that should for the sake of simplicity and rapidity be used (my pipette with rubber exhauster drops a minim of water, and I never consider it necessary to check it), and the difference, if there be any, between the drop and the minim can be determined in a few seconds by dropping from the pipette the same number of drops as have been used in the test into a minim measure, and, if the number of minims does not correspond with the number of drops, taking the number of minims as the figure which at the bottom of the chart indicates the point from which the eye should glance up to the point where the curve cuts the vertical line. For example, say 8 drops of urine have been added drop by drop to the boiling Fehling's solution before there forms the red rapidly falling precipitate leaving the fluid free from all blue colour, 8 drops of the same

[1] I always use a pipette manufactured for me by Down Bros. It has a rubber ball at the top (practically a large nipple) which has a smaller capacity than the bulb of the pipette. By compressing the bulb and allowing it to expand again the urine is drawn into the pipette and by gentle pressure of the thumb it is more easily discharged drop by drop than from an ordinary pipette.

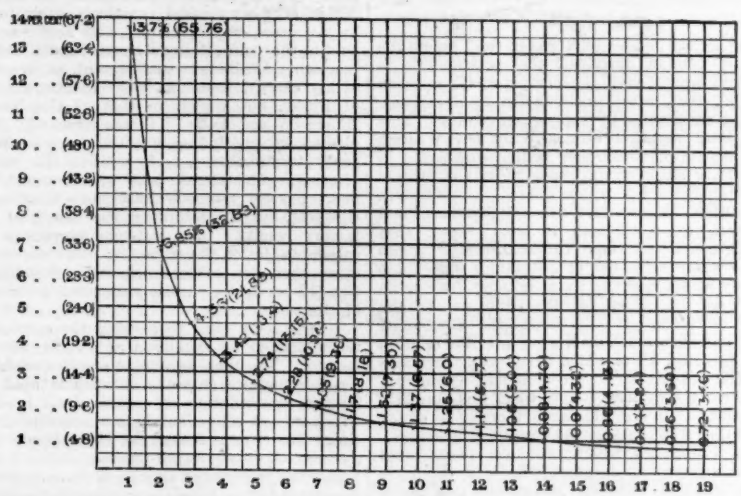
urine are dropped from the same pipette into a minim measure, and you find that the 8 drops of urine measure only 7 minims. You therefore take the figure 7 (not 8) at the bottom of the chart, glance up the vertical line above that figure to the curve, and there read that the urine tested contains 1·95 per cent. of sugar—i.e., 9·36 grains to the ounce. This correction of the error arising out of the difference between minims and drops will scarcely ever be necessary in the practical work of the consulting-room or bedside, but should it be required it will not occupy more than 30 seconds of time and a minimum of trouble.

On examining the chart the reader will also see that with urines containing a very high percentage of sugar the pipette or into a pipette manufactured so that a drop measures a minim, any quantity of the urine to be tested.

Boil 30 minims of Fehling's solution in a test-tube and into it deliver the urine from the pipette drop by drop (boiling momentarily after each drop) until the blue colour is discharged from the Fehling (this being usually indicated by the formation of a blood-red precipitate of suboxide of copper).

Note the number of minims of urine consumed. Now refer to the Chart, and, having found the corresponding figure below the Chart, trace the vertical line upwards until it meets the curve—the figures, there found, indicate the percentage of sugar and the number of grains per fluid ounce

FIG. 2.



The figures opposite the horizontal dark lines of the chart, as well as those on the curved line crossing the chart, indicate the percentage of sugar, and the corresponding number (figures between brackets) of grains of sugar per fluid ounce. By "percentage" is understood "weight in volume"—i.e., grains per 100 minims. The figures below the vertical dark lines indicate the number of minims of urine consumed in discharging the blue colour from 30 minims of Fehling's solution.

minim is too coarse a measure for the quantitative analysis—thus, if one minim only of the urine is consumed in producing the blood-red precipitate it signifies that there are not fewer than 65·76 grains to the ounce; if the red precipitate does not appear with one minim but does appear with two, it signifies that there are not fewer than 32·68 grains to the ounce; but a much more accurate estimate is necessary than this gives, and therefore if the number of minims consumed indicates more than 2 per cent. of sugar (i.e., if fewer than 6 minims of urine are consumed in testing the undiluted urine), to get an accurate estimate it is necessary to dilute the urine by adding 1 fluid drachm to 3 fluid drachms of distilled water, making a strength of 1 in 4. With this dilute urine the test is repeated, the number of minims consumed in producing saturation of half a drachm of boiling Fehling's solution is noted (say 7 minims are consumed), the eye glances from the figure 7 below the chart to where it cuts the curved line; the figure then indicates 9·36 grains per ounce as the amount in the diluted urine, multiply by 4, and you have 37·44 grains as the amount per ounce in the undiluted urine.

In my own consulting room, where pipette, test-tubes, lamp, and ounce and minim measure are close at hand, I find it takes me from two to three minutes from lighting my lamp to stating the percentage and number of grains per ounce of a urine containing less than 5 per cent. of sugar—it takes about double that time if the urine contains five per cent. and I have to dilute it and repeat the test.

The following are the brief directions which with the chart I have commissioned Messrs. Down Bros. to print on a card which may be hung on the wall over the test stand, and I hope that other busy practitioners like myself may find it of great practical value.

"For applying the test, draw up into a graduated minim in the urine. Inasmuch as, in the case of high percentages, the minim is too large or coarse a measure to indicate with sufficient precision the exact amount of sugar in the specimen examined, it is necessary when the test with the natural undiluted urine indicates more than 2 per cent. of sugar, to repeat the test with diluted urine as follows:—Dilute one fluid drachm with distilled water to the volume of half a fluid ounce (thus obtaining a solution of 1 in 4)—test as directed above—multiply by 4 the number of grains per ounce indicated in the diluted urine and you have the amount in each ounce of the original specimen.

Examples.—1. A patient having collected all the urine passed in 24 hours (amounting to 70 ounces) brings a sample. This is tested as described in the directions given above; the discharge of all the blue colour does not occur until the *seventh* minim is added, indicating (on reference to the curve) that there are not less than 9·36 grains of sugar per fluid ounce in the sample. 9·36 × 70 = 655·20 grains = 1 ounce 2 drachms, 55 grains per diem.

2. A patient passes 80 ounces in 24 hours. In testing the sample the blue colour is discharged with the formation of a blood-red precipitate on the addition of the *third* minim, indicating (on reference to the curve) 21·89 grains of sugar per fluid ounce. Now, whereas the blue colour was certainly *un*discharged on addition of the second minim nevertheless the third minim *might have been* a little more urine than was really necessary to effect the discharge, consequently, dilute the urine to 1 in 4 and repeat the test, as directed. 11 minims of the diluted urine added drop by drop are consumed in discharging the blue colour. Find 11 on the Chart and observe that its vertical meets the curve at 6 grains of sugar per fluid ounce; but the urine was diluted 1 in 4, therefore

multiplying the latter figure by 4 we have 24 grains per fluid ounce as representing the precise quantity of sugar present in the urine: and multiplying this result by 80 (the total amount of urine passed) we have 4 ounces as the amount of sugar excreted daily."

Peterborough.

AN INVESTIGATION INTO THE CLINICAL SIGNIFICANCE OF ALBUMOSURIA AND ITS VALUE IN DIAGNOSIS AND PROGNOSIS.

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IN 1848 Henry Bence Jones[1] in a paper read before the Royal Society in London described the presence in a urine of a proteid which gave the characteristic reaction of albumoses—i.e., that, after precipitation by a reagent, they are dissolved on heating to reappear on cooling. This same case was later reported clinically by Dr. William Macintyre.[2] In course of time other bodies were found in the urine which gave some of the reactions of the proteid described by Bence Jones but which differed somewhat in chemical composition. These were called "peptones" and "albumoses" and, to distinguish it from these, that described by Bence Jones was called "Bence Jones albumose." Now when the earlier investigations were made on this subject by E. Maixner[3] and von Jaksch[4] little or no distinction had been drawn between the peptones and the earlier products of proteolytic digestion—the albumoses. Since then there has been much discussion as to the relation of these various proteids, all of which have certain reactions in common. The advances in physiological chemistry, however, have clearly established that what was formerly described as "peptone" in the urine should really be called "albumose" and that true peptones (as described by Kühne,[5] true albuminous substances which are not precipitated by salting with ammonium sulphate) do not occur in the urine. The relation between albumoses and Bence Jones bodies has also furnished ground for much difference of opinion, but, according to G. Paten and Ch. Michel,[6] the Bence Jones bodies seem to be transition products between albumins and true albumoses, but more nearly akin to the latter. W. P. Elmer[7] believes that for clinical purposes we may safely consider as albumoses all proteids in the urine which dissolve on heating to reappear on cooling in the presence of certain reagents. Primary and secondary albumoses are described (the latter being nearest the peptones) and their chemical reactions merge to some extent, but clinically they seem to have the same significance, representing, as they do, the earlier stages of disintegration, by hydration, of albumins, the end products of which are xanthin bases, uric acid and urea. Normally these end products are reached before they are excreted by the urinary apparatus, but when tissue disintegration reaches a certain point this change can no longer be completely accomplished, and a part is taken into the blood and excreted by the kidneys as albumoses. It is not quite clear whether albumoses are ever taken up from the intestine in sufficient quantity to make them appear as such in the urine. C. A. Herter[8] states that this sometimes happens, but it is well established that albumoses occasionally appear in the urine in conditions apparently unconnected with disturbance of intestinal digestion.

Permanent and abundant albumosuria of the Bence Jones type may be regarded as almost pathognomonic of diffuse sarcomatous degeneration of bone marrow. Albumosuria has been found chiefly in suppurative processes, in which pus is retained and disintegrated, in acute infectious diseases, and in acute inflammations, in particular in pneumonia and empyema, or large abscess. It has also been found in some cases of nephritis.

I have interested myself during the past two and a half years in the subject of albumosuria, and have carried through a large number of investigations in various diseases with a view to determine the clinical significance of albumosuria and its value in diagnosis and prognosis. At first I examined the urine in all cases of acute or grave disease admitted into the wards to which I am attached (those of Dr. W. K. Hunter); latterly, I have confined my attention particularly to cases of pneumonia and nephritis in its various forms.

Method.—As regards the methods employed, I have tried a number of tests recommended by various authors, but some of these are much too elaborate for daily use. Those I have regularly used are such as may be conveniently carried out in ordinary clinical practice. After testing for proteid in the usual way by boiling, and acetic acid, and by nitric acid in the cold (Heller's contact method) I used the biuret reaction. If albumin was present, as in a large percentage of my cases I found it to be (contrary to the experience of Elmer, but similar to that of Charles E. Simon[9] and Dickinson and Fyffe[10]) it was removed. This was accomplished by precipitation with an equal volume of 10 per cent. trichloracetic acid, boiling till concentrated, and filtering. The filtrate was then subjected to the biuret test. Several methods have been recommended of doing this test, but the following was found to give fairly satisfactory results. In a test-tube place one drop of copper sulphate solution (2 per cent.); add five cubic centimetres of urine, then five cubic centimetres of sodium hydrate solution (10 per cent.)—a rose-pink colour indicates the presence of albumose.

I have for a time been using the method described and recommended by Dickinson and Fyffe, which is very satisfactory. The idea here is to secure a contact reaction and for this purpose only one solution is used, consisting of a 20 per cent. solution of caustic alkali in distilled water, to which enough copper sulphate is added to give it a faint blue tint. The urine is floated on the surface of this solution and a rose-pink colour at the junction of the fluids indicates as before the presence of albumose. This method was originally recommended by Neumeister to avoid possible obscuration of the colour by urinary pigment.

Of the other tests, that of J. A. McWilliam,[11] as modified by Elmer, is one which is easily applied and is very delicate. The reagent employed is a 50 per cent. solution of sulphosalicylic acid in distilled water. This precipitates all the proteids found in the urine on contact. If on heating the precipitate disappears, to reappear on cooling, albumose is present. Where albumin is present it must be removed by filtration and the filtrate allowed be to cool, when the albumose will appear. A small quantity of reagent only is required—viz., 3 to 5 drops to five cubic centimetres of clear urine. Elmer has obtained positive reactions in urines which contained 0·08 per cent. of albumose when unassociated with albumin, and 0·1 per cent. when albumin also was present. I have found this test a useful and satisfactory one, and where the reaction is very faint it is a good plan to divide the urine into two parts and to cool one while warming the other. They may then be compared against a dark background and minute differences in turbidity may then be distinguished. The biuret test may here be applied as a check.

With regard to the quantitative estimation of the amount of albumose present, I tried in some cases a comparison of the tint produced with the biuret with that obtained by a standard solution of commercial albumose in a similarly coloured proteid-free urine. (I have since observed that this was recommended by Dickinson and Fyffe.) The result was unsatisfactory and the proportion of albumose present was rarely sufficient to suggest the value of such an estimation. In a few cases it was excreted in such a quantity that it might reasonably be expected to exert a toxic influence on the patient while passing through the blood, as by experiments on animals it has been found that various effects have been produced by injecting albumose into the blood—viz., fall of blood pressure, fever, narcosis, and portal congestion.

[1] Philosophical Transactions of the Royal Society, London, 1848, Part I., p 551.
[2] Transactions of the Royal Medical and Chirurgical Society, London, 1850, p. 211.
[3] Centralblatt für die Medicinischen Wissenschaften, Berlin, 1879, p. 593.
[4] Prager Medicinische Wochenschrift, Nos. 7 and 9, 1881.
[5] Zeitschrift für Biologie, 1892, vol. xi., pp. 1-40.
[6] Comptes Rendus de la Société de Biologie, May 28th, 1904, p. 889.
[7] American Medicine, vol. xi., No. 5, 1906.
[8] Lectures on Chemical Pathology, 1902.
[9] Manual of Clinical Diagnosis, fifth edition, New York, 1904, pp. 486-502.
[10] Transactions of the Clinical Society of London, 1891-92, vol. xxv., pp. 64-73.
[11] Brit. Med. Jour., 1892, vol. i., p. 115.

Pneumonia.—I have records of observations in 78 cases of pneumonia, in most of which repeated examinations were made. Of these 78, 15 had a fatal issue—a mortality of 19·2 per cent. The series, therefore, was one of average severity. In 50 cases no albumose was found at any time during the course of the illness, and of these cases three ended fatally (6 per cent.). Out of 28 cases which showed albumose, varying from a slight trace to a distinct reaction, 12 ended fatally—a mortality of 42·8 per cent. Of the 15 fatal cases 12 showed albumose to be present in varying quantity, and in six of those a distinct reaction was noted. A very definite alcoholic history was obtained in five cases of the fatal series, while of the others one was a case of the migratory type and associated with glycosuria; another had tubercle bacilli abundantly present in the sputa; the remainder were apparently uncomplicated. Of the three fatal cases which showed no albumosuria, one had a definite alcoholic history, one was of a migratory type, while the third was a case with extensive involvement of both lungs.

The most outstanding clinical feature of the cases associated with albumosuria was the severity of their character during the primary fever, usually accompanied by higher delirium. The much higher rate of mortality is striking and speaks for itself. As regards blood pressure, I have records in the majority of my cases obtained by means of Martin's modification of the Riva Rocci sphygmomanometer, which show that the systolic pressure in the brachial artery is not markedly, or uniformly, lower in cases with albumosuria than in ordinary cases.

From the point of view of prognosis it would seem therefore that the presence of albumosuria must be regarded as unfavourable, in view of the higher mortality in such cases. As regards the severity of the disease, generally speaking albumosuria suggests greater severity, though some of the most severe cases—three of which ended fatally—never showed albumose. From my observations it is clear that the presence of albumosuria does not furnish a reliable index of the extent of lung tissue involved in this disease. Elmer states that the greatest clinical value of albumosuria is in cases of pulmonary disease, and he suggests that albumoses seem to be a better guide to the condition than is the leucocyte count. In nearly all my cases the leucocyte count was recorded on at least one occasion. Of the cases which recovered, the initial count of leucocytes varied from a minimum of 9670 per cubic millimetre to a maximum of 36,500, only one case being below 10,000. Of the 15 fatal cases, the lowest initial count was 3432, the highest being 15,000, though in two cases there was later a considerable increase in the number. The average initial count over the fatal cases was 9143, against 23,085 in those which recovered. In a large series of cases quoted by R. C. Cabot,[12] out of 32 cases with leucocytes under 10,000 30 were fatal. From the opinions of Cabot, Ewing,[13] and other authors, we find that the absence of leucocytosis is commonly accepted as a bad sign, while its presence is neither good nor bad, and is no guarantee of a favourable issue, though it is a useful index of systemic reaction. From comparison, therefore, it appears as if the prognostic value of albumosuria and of a leucocyte count were about equal, with the balance rather in favour of the latter. It should also be added that persistent albumosuria in pneumonia suggests the possibility of complications, and especially, where it is found present in quantity, the presence of empyema should be suspected, or possibly, the formation of abscess. In one case, which I shall allude to presently in more detail, the appearance of albumosuria was noted even before the physical signs suggested empyema, and, later, pus was found on exploration. In another case in which albumosuria was persistently present in marked quantity consolidation was succeeded by breaking down of lung tissue, with the formation of abscess.

With regard to conditions allied to lobar pneumonia I have records of a number of cases:—

Broncho-pneumonia.—Six cases. In none of these was albumose found in the urine, though one was a very severe case associated with whooping-cough, and another, probably tuberculous in character, which proved fatal.

Empyema.—Three cases. One of these proved very interesting. He was admitted suffering apparently from pneumonia, though the physical signs were rather those of pleurisy at the right base. The temperature was well sustained till the tenth day, and his systemic reaction was apparently satisfactory, the leucocytes on admission being 32,448 cubic millimetres, rising three days later to 37,440. The urine showed diminished chlorides, a trace of albumin, but no albumose. After the tenth day the temperature began to oscillate and his condition was not so satisfactory. On the twelfth day for the first time a trace of albumose was observed. Though the physical signs were not distinctive the presence of empyema was suspected, and next day a needle inserted at the right base demonstrated the presence of a few drops of pus. The quantity of albumose was then greater. Two days later (during which albumose was noted as distinct) a needle was again inserted and pus was found in greater quantity. The patient was operated upon, and the pus, which was only present in small quantity, evacuated with satisfactory result. Within 24 hours the albumose had quite disappeared from the urine. The second case was a typical empyema, and here a decided albumose reaction was obtained, which disappeared after the evacuation of five and a half pints of pus. The third case, though typically an empyema, showed no albumose. Possibly in this case the surrounding membrane was thicker, thus impeding absorption.

Pleurisy with effusion.—Six cases. Of these, five patients never had albumosuria. The other patient whose case was the only definitely tuberculous one presented traces at intervals.

Pneumothorax.—One case, of definitely tuberculous origin, showed no albumose on repeated examination.

Phthisis.—Six cases. Of these, four gave negative results. One case, in which the pulmonary condition complicated diabetes mellitus, and in which there was marked excavation in both lungs, gave a very marked albumose reaction, the most intense I have yet seen. Another showed albumose in increasing quantity under observation. Both had a fatal issue.

I have also examined a number of cases of bronchitis, some of which were very acute, but with negative results.

I have given these pulmonary cases in some detail, because it is in such cases where the presence of albumose seems to have some clinical value, more especially in pneumonia, or where suppuration in the chest is suspected.

Another great group of cases in which I have regularly examined for albumose is that of *nephritis*. Beyond the statement that albumose occurs occasionally in such cases I have not been able to find any reference in literature. My observations are based upon examinations in upwards of 80 cases. I have endeavoured to classify these cases, though the present classification of the varieties of nephritis is not satisfactory. The typical acute case of the text-book does not now seem to be so common as it used to be, or at least we meet with fewer of them in hospital practice. Of the series, 13 conformed to this type in most particulars; 17 seemed to be of milder type, and I have classed them as subacute; 12 cases appeared to be acute cases passing into the chronic stage; the remainder were cases which were chronic on admission, though some showed a more or less acute attack superimposed on a chronic condition. Of the frankly acute cases only two showed albumosuria at any time during residence. The first was associated with uræmia and the urine for a time contained a trace of albumose, but later it cleared up with complete recovery. The second was admitted with uræmic convulsions and died two days later. Albumose was here distinctly present. The kidneys in this case were examined microscopically and showed a marked degree of acute parenchymatous nephritis. Of the 17 subacute cases only one had albumosuria (and here there was a distinct reaction), uræmic symptoms were present, and the patient died four days after admission. Microscopic examination of the kidneys showed a subacute parenchymatous condition, with a very slight new formation of fibrous tissue. The remaining 16 cases showed no albumose and all made a complete recovery. Of the 12 cases which appeared to be passing into the chronic stage four never showed albumose, while the remainder never showed more than a slight trace, and that not persistently present. Of 40 chronic cases (27 of which were of the chronic interstitial variety, nine of the chronic parenchymatous, and four of mixed character), 12 patients never had albumose present in the urine during residence and these cases were all of the

[12] Clinical Examination of the Blood.
[13] Clinical Pathology of the Blood.

chronic interstitial variety. Of these only one proved fatal. In this case death, which was sudden, was apparently of cardiac origin (a double aortic lesion was present). This also was the only fatal case of the nephritis series which never showed albumosuria. All the chronic parenchymatous cases (nine) showed albumose in varying degree and in four a marked reaction was noted. Of these four cases, three proved fatal. Of the four cases of mixed chronic disease, three showed a distinct albumose reaction and two proved fatal under observation. Of the 15 chronic interstitial cases which showed albumose, three gave a distinct reaction, nine presented only a trace, while in the remainder the reaction varied in intensity. Of these, six cases ended fatally under observation.

From this series the following deductions may be drawn: 1. In acute and subacute nephritis albumose is rarely present. When present it may be associated with uræmia, and, indeed, may herald its onset. 2. Albumosuria seems to indicate the presence of a chronic condition and it is most constantly present in the chronic parenchymatous variety. 3. The presence of albumosuria is often in such cases associated with, though it does not necessarily indicate, an early fatal issue.

Another group of cases in which I have examined the urine for albumose is that of *cardiac disease*, and I have records of 50 cases, in all of which compensation had failed, and some of which were otherwise complicated. In only five of these was albumose found, and two of these were cases of ulcerative endocarditis, both of which proved fatal. Another was a pericarditis with purulent effusion, which also proved fatal. In these three cases albumose was persistently present. Of the total series 17 were fatal.

I have examined the urine also in three cases of *appendicitis*. The first was a slight case and recovered without operation. There was here no albumose. The other two cases were associated with abscess formation and both gave a positive reaction, the one marked and the other slight. The albumosuria here therefore suggested, and indeed indicated, the presence of pus. The leucocytes also gave the same indication, being respectively 25,000 and 30,000 per cubic millimetre.

Of four cases of *diabetes mellitus*, where albumose might be expected to be present owing to the amount of tissue waste going on in the body, a positive reaction was obtained in only one. This case has already been referred to, as it was associated with extensive excavation in both lungs, of which presumably the albumose was an indication.

Elmer states that in cases of Hodgkin's disease and leukæmia treated with Roentgen rays a considerable amount of albumose is excreted. In two cases of Hodgkin's disease and one of leukæmia treated thus I found no albumosuria even after prolonged treatment.

I have examined for albumosuria in a number of other diseases and have found traces in a case of tuberculous meningitis and also in one of biliary cirrhosis.

Albumose has been stated to be present in cases of acute rheumatism and rheumatic fever, especially where there is effusion into the joints. In several very acute cases with effusion I have had negative results, and also in three cases of rheumatoid arthritis I have found no albumose.

In septicæmia, where no doubt there is considerable absorption of partly-disintegrated proteid along with the other septic products, albumose has been found to be present. In one case where the source of absorption was a small abscess in the intestinal wall I was unable to find albumose even on repeated examination, though the condition of septicæmia was very pronounced and ultimately proved fatal. This case I have already published in detail.[14]

In the majority of the cases with which I have dealt the origin of the albumoses is probably pus, or, at least, inflammatory exudation. Their formation is probably due, as suggested by M. L. Harris,[15] to the digestive action of the invading micro-organisms on the rich albuminous fluids and tissues in which they develop; just as in higher forms of life, more is digested than is assimilated, and, as the albumoses are very diffusible, the excess is readily taken up by the blood and eliminated by the kidneys. The staphylococcus pyogenes aureus seems to be the most powerful in this respect, but there is ground for supposing that the pneumococcus and streptococcus are almost equally powerful in the same direction.

I have thus endeavoured to show that albumosuria is a more frequent condition than is generally supposed, and from the records I have given there is sufficient ground for the suggestion that in certain diseases it should be searched for in the ordinary routine of urine examination, more especially in pneumonia or in cases where suppuration is suspected. In fact, it should be looked for in all cases where excessive tissue waste is thought to be present.

Glasgow.

[14] Glasgow Medical Journal, October, 1907.

[15] American Journal of the Medical Sciences, Philadelphia, 1896, vol. cxi., pp. 557-569.

OPERATIONS FOR RECTAL CANCER.[1]

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IN discussing some of the problems in connexion with the operations practised for the removal of rectal cancers I will confine my remarks to the more usual class of case in which the sphincteric zone is not involved and to male rather than to female patients. Although it is usual to consider the various perineal and transacral routes as the normal directions through which to perform the necessary removal of a growth, it is obvious that these operations do not fulfil the conditions required by surgery for the extirpation of malignant disease in other regions. Not only is the mortality large (from 10 to 20 per cent.) but glands and suspected areas can only be dealt with in a haphazard manner rendering recurrence frequent; again, the restoration of sphincteric control depends upon the chance of a mesocolon not less than six inches long, the absence of which necessitates the formation of an iliac or sacral anus. The majority of operations carried out after the manner of Kraske must therefore be incomplete, and in addition either before or during the operation it is impossible to tell to what extent the disease has already travelled. It must be quite a common error to remove a malignant rectum through a posterior route when dissemination is already extensive. This is to be expected, seeing that the glands which drain the rectum run up to or above the promontory of the sacrum and are diseased, according to von Bergmann, in two-thirds of all diagnosable cases.

A recent paper on the subject chronicles eight cases of cancer of the rectum which appeared favourable for operation until an incision (made with a view to perform a preliminary colostomy or an exploratory laparotomy) revealed cancer nodules in the peritoneum and iliac glands preventing the possibility of radical operation. Kraske himself, in view of numerous cases of recurrence, abandoned his own operation in favour of some combined method. I will give a very brief *résumé* of three consecutive cases in my own experience which impressed these points on my mind. In the first case the growth in the rectum could be felt about a finger's length above the anus, and so far as could be ascertained free from attachment in front or behind. On this occasion, as no satisfactory evacuation of the bowels could be obtained and the man had been for some time constipated, a preliminary colotomy was performed, but before doing so the hand was passed into the abdomen only to find the liver involved and the case consequently inoperable. In the second case, that of a man at present in Mercer's Hospital, alternate diarrhœa and constipation had (as is said to be typical) troubled him for some weeks and the passage of mucus and slime was noticed by the patient. A growth well above the sphincteric zone was felt in the rectum of this man as in the last and was freely moveable; the man looked in excellent health. I thought this was an ideal case to perform the operation presently to be described, and having worked out the details twice on the cadaver I proceeded to open the abdomen. The upper limits of the growth could now be felt in the pelvis freely moveable on the sacrum behind and unattached to the bladder in front. One or two glands could be felt below the promontory of the sacrum. Before commencing the removal of the growth the liver was examined and here, to the surprise of everyone, secondary growths had already appeared. These two cases emphasised the necessity of opening the abdomen in

[1] A paper read before the Royal Academy of Medicine in Ireland.

future, and if possible of doing a radical operation in the same manner as is applicable in cancer of the colon at a higher level. While this patient was still in hospital another was admitted, a woman, aged 27 years, who had not had a motion for four weeks. This case was misleading; the patient told a story as if suffering from irritable ulcer of the rectum, how passing a motion hurt her, how she postponed it only to be caused more intense pain at the next evacuation of the bowels, and how soon she was obliged to go to bed after the bowels had acted; finally, the fear of passing a motion drove her for advice to hospital after suffering from complete constipation for four weeks. The patient was anæsthetised and the colon was irrigated for an hour with oil, hydrogen peroxide and quantities of water to break down the fæcal impactions which could be felt in the cæcal region, hepatic and splenic flexures, and in the descending colon. This was accomplished to a certain extent but by no means a complete evacuation took place. A rectal examination revealed a malignant stricture, again about a finger's length from the anus. The stricture admitted the point of the finger and the upper limit could apparently be reached. The age of this patient was against her and she looked badly, yet there was a hope that a radical operation might be possible and that her looks might be largely accounted for by the intense chronic obstruction from which she had suffered. An incision was made in the *right* iliac fossa with a view of exploring the pelvis and liver, and of performing appendicostomy or cæcostomy to wash out or to drain the colon for a few days prior to radical removal. The liver was involved over a limited area together with a mass of glands leading from the lowest limit of the pelvic cavity upwards and inwards along the course of the inferior mesenteric artery. The wound on the right side was closed and a left iliac colostomy was performed. In all three cases the abdomen was examined prior to operation under an anæsthetic; in one the conditions seemed very favourable for operation, and in the other two excision of the growth through a transacral incision did not seem contra-indicated, until a laparotomy revealed the true extent of the disease.

Having pointed out the grave errors which may accompany the routine removal of the rectum from behind, it remains to give some alternative which to be ideal should fulfil the following conditions: 1. The removal of the bowel from a point as low as the safety of the sphincteric apparatus will allow, to a point at or above the sacral promontory, together with all the glands and cellular tissue in this suspected area. 2. The improvement of the mortality rate, immediate and remote, the former by improved technique, the latter by more radical operation. 3. The avoidance of the necessity of a sacral or iliac anus.

It appears obvious that these conditions can only be fulfilled by an abdominal operation or a combined method. Why, then, have the majority of surgeons avoided these routes and sought to improve operative procedures by modifications of the original Kraske or perineal methods? The answer to this question would seem to be that the mortality after combined operations is great and that the attempt to bring the divided bowel in a truly radical operation to the anus either fails altogether or is accompanied in a number of cases by extensive sloughing and fistulæ.

The high mortality of the combined method of operation may be attributed to various causes; for example, the increased time necessary and the performance of an aseptic and septic operation at the same time with faulty technique. These two difficulties were overcome by the Mayos, the two surgeons working simultaneously, one in the abdomen and the other in the perineum. Another factor telling against the immediate results of combined operations, as is pointed out by Crile, is that the shock produced not only by extra time and loss of blood, but by the free division of sensory nerves in the perineum, is frequently excessive. Yet the method might be improved if the great bulk of the operation could be performed through the abdomen and the perineal portion consist merely in the introduction of a few sutures and drainage tubes.

It was an operation such as is described by Moynihan for extensive removal of sigmoid cancers that I contemplated performing on the last two patients to which I have referred if the disease had been found localised. Subsequently when about to deal with the third case a paper by Alexander of Montreal was brought to my notice suggesting an operation for cancer of the rectum, which embodies the principles of that suggested by Moynihan in the case of the pelvic colon. The operation is performed entirely through the abdomen; the colon is divided not lower than the level of the sacral promontory, and free mobilisation of the proximal end permits of it being brought to the anus without sufficient interference with the blood-supply to cause necrosis. It is this mobilisation of the pelvic colon which is the keynote of the fulfilment of two of the conditions previously mentioned for an ideal operation, that is, a division of the bowel as high up as the glands are likely to be involved (in most cases this limit being at the promontory of the sacrum) and the avoidance of the cosmetic disadvantages of an artificial anus. With a patient in the Trendelenburg position and an effective automatic retractor placed in an ample median incision this mobilisation becomes a matter of the greatest ease and is carried out in a manner similar to the freeing of the duodenum in Finny's operation of gastro-duodenostomy or in retro-duodenal removal of gall-stones. Mobilisation must be free; any niggardly attempt to save the blood-supply defeats its own object, for if the colon is brought down under tension from above the pull on the vessels may partially obliterate their lumen. The upper portion of the rectum is a danger zone, for here the vitality of the bowel depends on a couple of small branches if the superior hæmorrhoidal be divided, or if that vessel be saved and tension result from the manipulations to make both ends of the gut meet at the anus its anatomical position above closely applied to the sacrum renders the possibility of it becoming compressed against the promontory a likely mishap. But these misfortunes can only occur if the rectum is divided in the situation generally adopted in transacral operations; if a higher division is made the circulation is undoubtedly less interfered with, until in removing cancers of the pelvic colon the inferior mesenteric itself can be ligated at its origin without fear, during the removal of the gland-bearing area.

When the pelvic colon is divided at the sacral promontory in cases of cancer of the rectum the superior hæmorrhoidal and sigmoid vessels are ligated at their origin with the certainty that the loops of vessels placed at the junction of the colon and mesocolon will be supplied freely by collateral vessels anastomosing from the superior mesenteric and left colic arteries. Mobilisation is effected by splitting the peritoneum in the iliac fossa as far upwards on the left and parallel to the mesocolon as may be necessary. The colon and meso-colon are lifted bodily out of the abdomen from the posterior abdominal wall. In the Trendelenburg position the ease of this manœuvre can be only appreciated by those who have tried it. In the downward direction the peritoneal incision is carried in the pelvis to the cul-de-sac and then transversely across the rectum. Alexander suggested division of the bowel before mobilisation of the upper segment. I think for obvious reasons the reverse procedure is better. After complete mobilisation and ligature of the superior hæmorrhoidal vessels, or if necessary the inferior mesenteric, the bowel is divided, preferably with the cautery, not lower than the sacral promontory. The lumen of both segments is then crushed and closed. The lower segment is caught in a forceps, such as Kocher's goitre forceps, and pulled forwards. The superior hæmorrhoidal artery, if not already divided, is now put on the stretch and ligated. Blunt dissection lifts the rectum from the sacral wall and not much trouble is experienced in freeing it from the bladder in front. The middle sacral artery can be ligated as it lies on the sacrum if desired; the rectum can now be grasped by a clamp or ligatured below the growth at the pelvic floor and divided a couple of inches above the anus. This is a moment when great care must be exercised in technique to prevent infection. The anal canal is now turned inside out by an assistant grasping the mucous membrane with forceps in several places, and finally a long forceps is passed to pull the upper segment through the anus and the operation completed. On account of the difficulty which might be experienced occasionally in dividing the bowel from the abdomen two inches above the anus, a useful alternative would be, after the colon had been mobilised, to place a ligature round the gut as a landmark above the level of the promontory, and having detached the peritoneum and mesocolon and cellular tissue in the affected area, to close the abdominal wound and to luxate the growth through a perineal incision. The operation could be then completed by dividing the colon

above at the site of the ligature and as low as the safety of the sphincters would permit through the perineal incision. The union is made as before by extroversion of the anal canal, but with much more facility. This would, no doubt, be a more rapid manner to conclude the operation in many cases. Another alternative is for the assistant after mobilisation, as suggested by von Bergmann, to pass a forceps through the anus, to grasp the growth, and to pull the colon inside out, making an intussusception; the operation would then be completed outside the anus. This method fulfils the conditions of avoiding a sacral or artificial anus and probably would be attended with a small immediate mortality, but the remote results are not so good, for the gland-bearing area could scarcely be removed *en bloc* with the bowel, nor could the level of division of the latter be accurately ascertained.

In conclusion, with regard to the preparation of the patient—1. A thorough washing out of the colon with hydrogen peroxide for a few days and a hypodermic injection of morphine the night before operation will suffice for early cases without much obstruction. 2. For more obstructed cases exploration should be made through an incision on the right side, with a view of performing appendicostomy and to ascertain if the case is operable. Through the opening thus made in the appendix the colon can be thoroughly cleansed for a few days prior to the major operation and the closure effected painlessly at any time by dissecting out the mucous membrane with a tenotome. 3. And lastly, in badly obstructed cases a preliminary colostomy on the right side with all its disadvantages must be performed.

Whether for exploration or the performance of appendicostomy or colostomy prior to abdominal operations to remove cancer of the rectum, the incisions must be made on the right side in order to leave undisturbed the parts involved in the complete removal of the disease at a later date.

Dublin.

THE ADVISABILITY OF REMOVING THE APPENDIX AT THE TIME OF OPENING THE APPENDICULAR ABSCESS.

BY H. S. CLOGG, M.S. LOND., F.R.C.S. ENG.,

ASSISTANT SURGEON TO CHARING CROSS HOSPITAL; SENIOR SURGEON TO THE EVELINA HOSPITAL FOR SICK CHILDREN.

THIS brief paper deals with 131 cases of localised appendicular suppuration. In 23 the appendix was removed at the time the abscess was opened and in 108 cases it was left.

1. What was the fate of the 108 cases who were allowed to possess a diseased appendix? The complications which ensued in the series may be considered under the following headings.

(*a*) *Forta pyæmia* (*one case*).—A man had the abscess opened and a sinus persisted for several weeks, showing no signs of closing. He suddenly commenced to have rigors without any abdominal symptoms. Emaciation was rapid and after a week or two slight jaundice was noticed. These symptoms persisted till death. A necropsy could not be obtained and the extremely probable diagnosis of portal pyæmia was not therefore confirmed. This rare and grave complication of appendicitis seems to occur in cases apparently slight and often latent, and in more than one case it has been known to supervene when the abscess had apparently been satisfactorily drained.

(*b*) *Subphrenic abscess* (*three cases*).—In two cases the disease was fatal and post-mortem examinations were made. In each of these the abscess was draining satisfactorily from the clinical standpoint. On the seventh and sixteenth days respectively after opening the abscess the initial symptoms of some complication occurred. This after a few days was traced to a right-sided intraperitoneal subphrenic abscess. Death occurred from pulmonary complications. The appendix lay to the outer side of the cæcum and colon. The drain was anterior only, since it was impossible to place a posterior one without disturbing adhesions. It was interesting to find at the post-mortem examination that the original drain did not reach to the limits of the diseased appendix. The distal portion of the latter, although severely inflamed, was well outside the sinus. There can be no doubt that this was the source of the subphrenic infection. Had the appendix been removed a lumbar drain could have been established. This would seem the only possible way in which the upward peritoneal infection might be checked. The third case of subphrenic abscess occurred at the end of the third week. Clinically the abscess had drained perfectly. A right-sided intraperitoneal abscess was successfully treated. Possibly this complication might have been prevented by the method indicated above.

(*c*) *Diffuse peritonitis* (*one case*).—This occurred two weeks after the opening of the abscess. It is fair to state that such an event can occur even when the appendix has been removed. I have notes of one such case in which the appendix was removed and the abscess appeared to be draining satisfactorily. Ten days later diffuse peritonitis supervened and ended fatally.

(*d*) *Prolonged duration of the sinus.*—There is no time limit to the healing of an appendicular sinus. The size of the original abscess, its situation and depth, the possibility or not in suitable cases of a lumbar drain and the formation of a fæcal fistula are some of the features upon which this depends. But making due allowance for these there are a number of cases in which a sinus persists unduly and must be occasioned by some source of irritation at its deep end. After a variable interval these sinuses may soundly heal. But the healing is often only temporary. A second abscess forms and is either opened or bursts spontaneously. Healing may again occur, but only to be followed by a repetition of the abscess and the sinus. This condition may go on for months, and in one case it went on for two and a half years. There were 18 such cases in this series. They comprise those in which the sinus persisted for several weeks and then healed, and also those in which repeated recurrent abscesses occurred at short intervals after the healing of the sinus. In three of these cases healing occurred after a concretion had been discharged through the sinus. In two others, although a concretion was passed, the sinus did not heal. The source of irritation which causes a persistence of a sinus may, therefore, occasionally be a concretion which had escaped detection in the abscess cavity. But more frequently, as was determined by subsequent operation, it was the opened end of the appendix, the distal portion of which had sloughed, or a perforation in the wall of the appendix. The hole in the wall of the appendix became sealed over at times by delicate adhesions which were readily infected with a recurrence of the abscess. More than one of these sinuses were scraped without the slightest benefit, and there is no justification to anticipate good from this method of treatment. The only way to prevent this condition is to remove the appendix at the time of opening the abscess. Should this not have been done and should a sinus persist it can only be cured by the removal of the appendix.

(*e*) *Recurrence of suppuration* after the sinus had been healed soundly for weeks or months. In one case diffuse peritonitis from a perforation of the appendix occurred eight months later. In eight cases a localised abscess occurred at intervals varying from three months to one and a half years.

(*f*) *Recurrent non-suppurative appendicitis.*—This occurred in 11 cases.

The after-history of patients who did not require active surgical treatment has been ascertained by correspondence. I have made every endeavour to discriminate, from the descriptions which I have received, symptoms which in all probability point to the appendix and those which are not definitely referable to that organ but may be due to some other bowel disturbance. The cases comprise a period of six years. From 54 patients I have received a reply that they are perfectly well as regards their "operation for appendicitis." Twelve cases cannot be traced. In 42 cases out of 96, therefore, further complications arose, and these patients would have been better off if they had had the appendix removed at the time when the original abscess was opened. It should be mentioned that the proportion of cases in (*e*) and (*f*) may, as time goes on, become increased.

2. What are the dangers of removing the appendix at the time of evacuation of the abscess? The supposed risk here is the opening of the general peritoneal cavity. But the incision planned to open an abscess often traverses the general cavity when no attempt is made to remove the appendix. In 89 cases in this series I have notes upon this

point. In 40 the general peritoneal cavity was opened and in 49 it was not so far as was ascertained. The abscess cavity at the time of operation had not advanced to the anterior abdominal wall, or the incision, if adhesions to the latter were present, did not hit off the adherent area. By taking due precautions to shut off the general cavity before opening the abscess no harm results from the exposure. In 23 cases the appendix was removed at the time of opening the abscess. In some, quite a few, the appendix presented and was dealt with without apparently exposing the general peritoneal cavity. In the majority the latter was known to have been opened. No case of diffused peritonitis resulted. There is no reason why it should if precautions are taken to guard it and appropriate drainage is provided.

3. What is the condition of the appendix in suppurative appendicitis? In by far the majority of cases gangrene, localised or diffused, was present. In four cases only out of 23 was this not so. The appendix in these four showed general inflammatory changes throughout all its coats. In one of the four a concretion was present in the lumen of the appendix. In five gangrene of a considerable part of the appendix was present. The separation of such a slough must mean a longer duration of the time of healing than if the appendix had been entirely removed. Even when a portion is cast off there is a danger that the end may not become soundly sealed over, and this will account for many of the cases of persistent sinus. In the remaining cases there was limited gangrene of a portion of the wall of the appendix. The site of this was by no means constant. Perforation had occurred in several cases. In the majority concretions were present. Localised perforations of the appendix will heal but generally presumably with some narrowing of the lumen. This has been seen in some of these cases. In those in which the appendix was removed at the second time of abscess formation it has been observed. In other cases in which the appendix was removed at the time of closing a ventral hernia it was seen also. In these there was a tendency to dilatation of the distal part of the appendix.

It may be said that the lesions in the appendix in cases of suppuration are such as to lead to permanent and gross changes in the organ which predispose more than anything else to a recurrence of appendicitis. In addition, concretions are very frequently present in cases of suppuration. The concretion may escape through the perforation, but this does not always happen. A concretion remaining in the lumen of the appendix is a certain danger.

The danger of removing the appendix at the time of opening the abscess is more theoretical than real. The advantages to be claimed for the primary removal of the appendix are the following.

1. The time of the healing of the wound is lessened. In calculating this due allowance is made for the size, situation, and depth of the abscess.

2. There is less tendency to imperfect drainage, which is at times seen during the course of the healing of an appendicular abscess. This is so partly because the supply of infection is removed, and partly on account of the fact that the abscess cavity is so thoroughly opened that it may be drained from the most favourable position.

3. The rare complication of portal pyæmia following a persistent sinus may be abolished.

4. An inflammation spreading up the right colon to the subhepatic or subphrenic regions may be anticipated and cut short by a timely lumbar drain.

5. The exploration of the abscess cavity will enable any concretions which have escaped from the appendix to be removed. It is true that often when the cavity is wiped dry these can be detected and removed. But no doubt some will escape detection and will stand a better chance of being removed when the cavity is more thoroughly exposed, as it necessarily must be to remove the appendix.

6. The persistent sinus and frequently recurring breaking down of the scar will be practically abolished.

7. The risk of ventral hernia is by no means increased but may be actually lessened. Ventral hernia occurred in this series more frequently when a drain had to be established for some time. Primary removal of the appendix does not necessarily mean a longer incision through the parietes, nor does it lessen the chance in any way of the healing of the wound in part per primam. When the appendix is situated to the outer side of the cæcum and colon a lumbar drain may be established and the anterior wound closed almost entirely. The risk in such cases of a ventral hernia is considerably diminished.

8. The permanent changes in the wall leading to stenosis of the appendix, and the very frequent presence of concretions in the lumen which have not escaped into the abscess cavity are most potent predisposing causes to recurrent appendical trouble.

Exceptions may be made to the statement that it is advisable to remove the appendix in all cases of suppuration. A pelvic abscess which can be easily incised through the rectum is better drained through this route. The drainage of a pelvic abscess through a hypogastric incision is most tedious. A much more rapid healing is effected in the majority of cases by means of a rectal drain. An abscess in connexion with the appendix will rarely form primarily in the subhepatic or subphrenic region without any collection of pus in the iliac fossa. Such abscesses, the diagnosis of origin of which must be very uncertain, are better dealt with as primary affections. If for any reason—e.g., age, constitutional disease, or toxæmia—the time of operation should be curtailed as much as possible the abscess may be treated as the primary affection.

Harley-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF AN UNUSUAL FRACTURE OF THE RADIUS.

BY H. H. BASHFORD, M.D., B.S. LOND.,
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THE following cases, seen for the first time within a fortnight of each other and presenting an almost identical pathological condition, have seemed to me to present sufficient points of interest, apart from that of coincidence, to justify publication. In both cases the patients were telegraph boys, one aged 15 and the other 18 years, the lesion in each instance, as displayed by the radiographs, being a complete, simple, transverse fracture of the head of the radius 10 millimetres below the epiphyseal line and therefore above the insertion of the biceps tendon.

In the case of the first boy, aged 15 years, there was a history of direct violence applied to the outer side of the elbow as the result of a fall upon a floor; there was no separation of the epiphysis, the whole displacement of the upper fragment being about 5 millimetres forward and downward. When seen on the next day there was no marked swelling, and the limitation of movement was confined to the extremes of flexion and extension, supination, and pronation. The arm was placed on an internal angular splint and passive movements were commenced on the fourth day; active ones were encouraged eight days later, the splint being then omitted, and consisting of the buttoning and unbuttoning of all the waistcoat buttons and the stroking of the back of the head. The boy was able to use the arm in less than three weeks with almost perfect movement.

In the case of the second boy, aged 18 years, the history was one of indirect violence, the fracture resulting from a fall off a gymnasium vaulting-horse upon the extended palm (after the classical method by which a Colles's fracture is produced). The lesion was identical, both in position and displacement, with the last, the epiphysis, however, having already united with the shaft. In this case there were considerable swelling and ecchymosis, and passive movements were postponed for 13 days. Four days later than this the internal angular splint was omitted, and active movements were combined with the daily passive exercises. He was able to use his arm with comparative freedom of action 27 days after the accident, and at the time of writing has regained an almost normal range.

The chief features of interest, apart from an uncommon position of fracture, would seem to be, in the case of the younger boy, that in spite of the close neighbourhood to it of the line of fracture there was no separation of the epiphysis;

and in that of the second, the rather curious point that there was absolutely no injury to the wrist, notwithstanding the fact that the whole weight of a well-developed body must have been violently thrown for a moment upon the extended palm.

Both cases, perhaps, are instances of the very great value of early and systematic movement, passive and active, whenever in the treatment of fractures this is at all possible, and especially in regions, such as the above, where the formation of a comparatively small amount of callus may produce an altogether disproportionate result in the permanent handicapping of action.

General Post Office.

THREE CASES OF POSTURAL CARDIAC MURMURS.

BY E. L. MOSS, L.R.C.P. LOND., M.R.C.S. ENG.,
LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

THE following cases are examples of a cardiac murmur, dependent upon the position of the patient, a condition which, although fairly common, is not generally recognised. A murmur, systolic in time, heard over the upper part of the sternum, unaltered by respiration, may sometimes be produced by raising the arms to a level with the shoulders, as in the position of holding up the shirt to expose the chest for examination.

CASE 1.—A sergeant of the 2nd Battalion Rifle Brigade, aged 25 years, a well-developed, healthy man, had been diagnosed "disordered action of the heart, accompanied by aortic murmur," and in consequence had been doing only light duties and was warned to be careful about over exerting himself. When seen in March, 1908, a few days after the above diagnosis had been made, there were no symptoms of any kind and the man appeared and felt in good condition. Examinations of his heart in March, 1908, and January, 1909, both standing and lying down, revealed nothing abnormal, but directly he stood with arms raised as if holding up his shirt in front, a loud, rather high-pitched systolic murmur was audible, mid-sternal, about the level of the second cartilage. The murmur was not affected by respiration. It was noted to be synchronous with slight pulsation visible in the suprasternal notch and disappeared immediately the arms were lowered. Simply throwing the head backwards did not produce the murmur.

CASE 2.—A rifleman, aged 25 years, with well-developed muscles, looking "in the pink of condition," also had been warned to be careful about exercise on account of the condition of his heart. On examination he presented exactly the same condition as the patient in Case 1, except that the murmur on raising his arms was even louder. In no other way could it be produced.

CASE 3.—A native employed at the officers' mess had the same condition, but was a poorly developed individual with signs of arrested tuberculous mischief at the apex of his right lung, with scars and enlarged glands on the right side of his neck.

These few cases furnish illustrations of the occurrence of this murmur, which has been noticed many times in healthy soldiers during the past three years.

My attention was first drawn to the condition when endeavouring to decide whether the so-called "retraction murmur" occasionally met with in tuberculous children was really due to pressure of involved mediastinal glands on some of the large venous trunks, or whether it was a sign met with in healthy children as well, for I had noticed a similar murmur in children whom I believed to be quite physically fit. When trying to produce "retraction murmurs" in adults I met with the condition described. At first I thought it might be caused by traction on the trachea and bronchi, causing pressure or kinking of the aorta or pulmonary artery, but since the murmur is produced by raising the arms without backward extension of the head it seems more likely that the position causes an expansion of the lower part of the thorax, increasing the negative pressure within which allows a temporary dilatation of the aortic arch. Whether or not the normal aorta would be affected by this is not easy to say. Whatever the cause may be, it is well to recognise the condition, for misinterpretation might seriously affect the subject.

Shahjahanpur, India.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

MEDICAL SECTION.

Chloroma.

A MEETING of this section was held on Feb. 23rd, Dr. T. H. GREEN being in the chair.

A paper on Chloroma, communicated by Dr. F. DE HAVILLAND HALL, Dr. R. G. HEBB, and Dr. J. M. BERNSTEIN, was read by Dr. DE HAVILLAND HALL, who stated that the paper was based on a case of chloroma which was admitted into the Westminster Hospital on Nov. 8th, 1907. The patient was a girl, aged four years and three months. The illness commenced one month before admission with irritability and pain in the head. A fortnight later a lump developed on each side of the neck, the eyes became more prominent, and the veins over the temporal region were distended. On admission, in addition to the above, there was facial paralysis on the right side and the patient was very anæmic. On Dec. 12th double optic neuritis was noted. The patient gradually became weaker and more anæmic and died on Dec. 24th. The blood was examined on five occasions. On admission there were red corpuscles 4,100,000, leucocytes 40,600, and hæmoglobin was 60 per cent. On the day before death the red corpuscles were 1,140,000, leucocytes 23,900, and the hæmoglobin had fallen to 18 per cent. As usual in these cases there was nothing characteristic about the temperature chart. During the patient's stay in the hospital there was usually slight pyrexia, the highest temperature recorded being 102·4° F. As regards the question of diagnosis, it was pointed out that in this case it was comparatively easy. The anæmic appearance of the child, the masses in the orbital region, which even during life had a greenish tint, and the protrusion of the eyeballs presented a complex of symptoms unlike that met with in any other disease. The examination of the blood also helped to confirm the diagnosis, as there was a leucocytosis affecting the large lymphocytes. If seen at an earlier period, and supposing exophthalmos had been the first symptom, the possibility of a cerebral tumour causing the proptosis would have had to be considered, and the existence of optic neuritis with headache would probably have seemed to clinch the diagnosis. At the post-mortem examination chloromatous growths were seen in the ethmoidal region, in the middle fossa, near the end of both lateral sinuses, in the orbits, and in the dura mater of the vertex. In the trunk chloromatous tissue was found on the internal aspects of all the ribs, the innominate bones, and sacrum, and on the external surface of both scapulæ. The long bones (only one was examined) appeared exempt. All the growths were of an olive-green colour. The liver, spleen, and heart gave a slight iron reaction. Microscopically the growth was seen to be a small to medium-sized round-celled sarcoma. The effect of the following reagents on the pigment was tested: ether, chloroform, turpentine, alcohol, nitric and hydrochloric acids, xylol, ferrocyanide of potassium, caustic potash, and Lugol's solution. Of these, the only one which had a definite solvent or decolourising action was 0·2 per cent. potassium hydrate (KOH), which was allowed to act for 18 hours at 37° C. Special examination was made for the presence of bacteria but none were detected.

Dr. A. E. GARROD said that sarcomatous deposits about the orbit occurring in association with sarcomatous growths in the suprarenals produced symptoms similar to those seen in chloroma.

After Dr. DE HAVILLAND HALL and Dr. HEBB had replied, the meeting concluded.

MEDICAL SOCIETY OF LONDON.

Gastro-enterostomy.

A MEETING of this society was held on March 1st, Sir FELIX SEMON being in the chair.

Dr. SIDNEY H. C. MARTIN delivered the third of the 1909

Lettsomian lectures on Gastro-enterostomy, and in the course of the lecture observed that the cases for which this operation had to be performed did not form the majority of the cases of ulcer in the stomach and duodenum. Those which had pyloric stenosis were not to be remedied by medical means and were the cases which did best after the operation. There were other cases, however, in which the operation had to be performed, and those were the cases in which either there was a permanent open sore in the stomach associated with great scarring round the ulcer or in which there was no marked deformity of the organ produced by the ulceration. The cases in which the symptoms were produced by the condition of open ulcer and scarring were those having very severe pain as the chief symptom; and that localised boring pain which was frequently associated with a haggard look, especially after exertion, and which was not relieved by rest in bed, by dieting, or by an ordinary treatment of ulcer, was a symptom to which particular attention must be paid, even when it was not associated with vomiting. Gastro-enterostomy was of benefit in such cases. Continued digestive distress, even though the patient was treated by diet and medicines, in the case of ulcer was of great importance and might necessitate the operation. More particularly was that the case if there was profound defect in nutrition as shown by emaciation and progressive weakness. In such cases there was no question but that the operation of gastro-enterostomy led to great benefit to the patient. Repeated hæmorrhage unrelieved by medical treatment was an indication for the operation. No one supposed that anyone would disagree to the classes of cases enumerated as necessary for surgical interference, but Dr. Martin thought that in many cases the operation was advised in too haphazard a manner, without care being taken in making the diagnosis. Thus in not a few cases of pure neurosis the operation had been advised and performed; in cases of tabes it had also been performed. In doubtful cases the operation should not be performed unless the patient had had a period of rest and treatment to see to what degree benefit could be obtained. Cases of carcinoma of the stomach showed a very varying clinical picture. A difficult case was one in which a man towards middle age without previous gastric symptoms developed pain in the epigastrium, lost appetite, and began to waste, the symptoms being marked within a few months from the onset. Occasionally vomiting might supervene with or without hæmatemesis. There was marked hypochlorhydria and the condition was one of progressive disease. After the symptoms had lasted some time a mass was felt in the epigastrium, the presence of which, in association with the symptoms mentioned, rendered the diagnosis certain. Cases might be mentioned in which, in middle age, nodules of tertiary syphilis might be in the liver and be associated with wasting, and occasionally severe gastric symptoms. The previous history of the infection and result of treatment with mercury and iodide usually made the diagnosis clear. Of great importance, therefore, was the diagnosis of carcinoma of the stomach in its early stages, because it was only by early diagnosis before the mass had infiltrated to a great extent that a good result might be expected from operative interference. Cases might rapidly develop into pyloric stenosis, but that was frequently absent and other things must be discussed in making a diagnosis. The following points were of the most importance: The occurrence of the illness during an indefinite period, months or weeks. Frequently carcinoma was insidious in its onset, yet when it occurred in the stomach it soon left its mark in the production of symptoms and in impaired nutrition. In a patient with gastric symptoms rapid wasting of the muscles and loss of appetite occurring even for a few weeks were suggestive of organic disease, more particularly if there was no period of stress of work, mental or bodily, or of starvation to account for the symptoms. The second great point to be noted was the rapid deterioration of the secretory activity in the stomach, which was so frequently observed early in the disease. To sum up, therefore, the occurrence of illness during an indefinite period, the occurrence of symptoms referable to the stomach, the rapid impairment of nutrition, and the rapid impairment of secretory activity were the points to be considered in the early diagnosis of carcinoma, that was, in cases in which hæmorrhage was absent and when no tumour was palpable. Again, the results of treatment in such cases were bad. The patient when put to bed and dieted might be relieved somewhat from the symptoms of gastric distress, but there was no improvement in the nutrition and no improvement in the secretory activity of the stomach.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

New Pathogenic Spirochæta.—Tropical Notes on Barbados.—Extinction of Yellow Fever in Sao Paulo.

A MEETING of this society was held on Feb. 19th, Sir PATRICK MANSON, the President, being in the chair.

Mr. H. G. WATERS read a paper on a New Pathogenic Spirochæta associated with Bronchitis and Fever. He said that during his work in India he came across a spirochæta while examining for tubercle bacilli, and following up the case he was led to believe that it was probably the cause of a distinct type of fever associated with bronchitis. In January, 1907, a European guard of the East Indian Railway was sent to him from Delhi as a case of malarial cachexia requiring hospital treatment. He was admitted into the East Indian Railway Hospital at Tundla, and was seen by him on the following morning. The man was anæmic and very weak, with no definite enlargement of the spleen, and he had a temperature of 104° F. His blood was examined with a negative result for malarial parasites. On the second or third day he found that the patient's temperature on a four-hour chart was continuous, keeping between 102·6° and 104°, and that he was troubled with a very irritable cough, bringing up a quantity of thin watery expectoration. His chest was examined, with a negative result except for a few rhonchi, and his sputum was stained for tubercle bacilli. In the smears Mr. Waters found no tubercle bacilli but a large number of spirochætæ. Teaching some of his hospital assistants, he pointed out that these were found in many mouths, particularly in those with decayed teeth, dirty gums, &c. Following up that line, he examined the patient's mouth and found that he had no decayed teeth and that his mouth was well kept, and he failed to demonstrate any spirochætæ on or between the teeth, or by swabs from the buccal cavity and throat; at the same time there were plenty of them to be found in the mucoid material that he was expectorating. The fever remained for about 15 days and during the whole of the time spirochætæ were found in the sputum, disappearing when the temperature fell to normal. The patient was discharged to work at his own request, although still rather weak. About 14 days later he again reported sick and was admitted into hospital with the same type of illness—fever, cough, and expectoration—the spirochætæ being again present in the sputum. The second attack or relapse only lasted four or five days. The patient had remained well since except for an attack of benign tertian malaria in December, 1907. Having by chance found that case, Mr. Waters made a search amongst the native out-patients for a similar illness and found seven cases with the same type of spirochæta in the sputum, accompanied by fever and cough; none were taken as in-patients. Before the month was up all these were well and he found no more in the winter of 1907, nor again last winter (1908) did he come across any cases of that disease.—Dr. C. W. DANIELS pointed out that the peculiar symptoms having occurred in a series of cases was noteworthy, and it was also important to recognise that the cases showed a certain type of illness which was suggestive.—Dr. G. C. LOW emphasised the difficulty that there was in proving the pathogenicity of spirochæta, after which Mr. WATERS replied.

Dr. T. F. MACDONALD sent some Tropical Notes on Barbados. He wrote that the island had the name of being quite the healthiest island in the West Indies, and even some of its medical men said that there were practically no tropical diseases there and that therefore there was no reason for special study in that direction. Very little acquaintance, however, with Barbados was sufficient to prove that there was urgent demand for very special investigation into the question of disease. At the present moment a most interesting phase of things obtained, and no wonder that the ordinary medical intelligence was puzzled and that there was much difference of opinion among general practitioners of Barbados

as to the existence or non-existence of yellow fever in the island. Confusion arose from the fact that yellow fever, epidemic jaundice, influenza, and cases of unclassified jaundice were all to be found at the present time here and there on the island, and to confuse matters still more typhoid fever, ankylostomiasis, and pellagra were prevalent. There was the open question as to whether pellagra was pellagra or sprue; the latest report of Dr. Manning gave it as psilosis pigmentosa. He would be able to send home some specimens which would, he hoped, clear up the doubt, since the disease was quite unmistakeably pellagra. All the recognised symptoms of pellagra were present—pigmentation of the elbows, knuckles, knees, breast, and brow; and roughness of the skin, especially at the elbows and knees. The history showed insidious development among the poor who consumed a varying quantity of corn. Then there were the dementia and other mental symptoms and recurrence of the disease after partial cure. If, as was sometimes the case, the disease was complicated with typhoid fever, sprue, or ankylostomiasis puzzling symptoms were presented to the eye unpractised in tropical work. Dr. Alleyne of the hospital there kindly gave him permission to study the disease in the building set apart for those patients and Mr. K. S. Wise of Demerara had kindly undertaken to do the microscopic work of specimens sent to him, so that between them something definite should be forthcoming. However great the difference of opinion as to pellagra, it was still greater as to yellow fever. One practitioner on the island might have one or two fatal typical cases of yellow fever with all the symptoms of acute fever—black vomit and slow pulse—and so naturally diagnosed the dreaded epidemic. Another might have typical cases of epidemic jaundice, non-fatal and varying in severity, and he naturally declared against yellow fever. Then, again, cases of well-marked gastric influenza occasionally proved fatal and some of them had jaundice. Those cases were diagnosed correctly as influenza. The mistake was evidently being made of generalising from one set of cases to another. He had seen four cases of jaundice in Barbados—one from yellow fever, one from epidemic jaundice, one from influenza, and one from apparently simple obstruction of the bile duct, and he could quite sympathise with those who had never seen an epidemic of jaundice, such as he reported in the *Australasian Medical Gazette* in 1887 as having occurred in New South Wales. Of course, he could not say how much yellow fever there was in Barbados but he hoped that he had said enough to prove the point that expert investigation into the tropical diseases of Barbados was much wanted.—Dr. LOW said that the cases spoken of in the paper were pellagra; they were not cases of sprue, having but little resemblance to that malady. In regard to yellow fever he observed that it might be almost impossible to differentiate between it and malignant malaria in which hæmorrhages took place from the intestinal tract.

Dr. EMILIO RIBAS read a paper on the Extinction of Yellow Fever in the State of São Paulo (Brazil) and Rio de Janeiro city. He said that ever since Read, Caroll, Agromonte and Lazcar, and later Guiteras, inspired by the long observations of Finlay, made the first experiments in Cuba on the transmission of yellow fever by the stegomyia fasciata, he had been convinced of the scientific accuracy of their methods and of the truth of their deductions. It was objected to these conclusions that other sources of infection were possible seeing that Havana had for many years been a yellow fever infected centre, and the great improvement in the public health of that city had been attributed, not to the extermination of mosquitoes, but to some attempt at disinfection, and principally to the sanitary works which had been carried out during the North American occupation. For that reason he considered it would be useful to repeat the Havana experiments in the city of São Paulo which was at that time and had been for some years exempt from any yellow fever epidemic. He resolved at the same time to put in action an active campaign against the stegomyia fasciata as the only effective prophylactic measure against the spread of the disease. Observing every care in order to prevent any doubt, he obtained mosquitoes from larvæ caught in the town of Itu which was exempt from that malady, and he sent them immediately to São Simao, 365 kilometres from São Paulo, where they were made to bite persons attacked by yellow fever. 16 days later these mosquitoes were made to bite six volunteers in the cause of science in the city of São Paulo. Dr. Adolpho Lutz, Mr. Oscar Moreira, and he himself were bitten by those mosquitoes which had sucked blood from grave cases of yellow fever, but they did not present any alteration of health. That negative result was probably explained by an immunity obtained by Dr. Lutz and himself from frequent contact with yellow fever in epidemic centres. Mr. Moreira was a native of Rio de Janeiro and lived for eight years in Santos, and in both those cities yellow fever epidemics had been prevalent for many years. But the three other persons who were bitten lived in places exempt from that malady and had not been in any epidemic centres, and they presented the symptoms of yellow fever. In Rio de Janeiro, Marchoux, Simon, and Salimbeni, who were sent by the Pasteur Institute of Paris to study yellow fever, also confirmed by experiments the transmission of yellow fever by the stegomyia fasciata, and in their experiments put forward other interesting details on the subject. There had been no epidemic in Santos since 1900 and they had thus good reason to believe that yellow fever had been exterminated from a city where it was endemic for over half a century. From 1901 to 1904 sporadic cases were of rare occurrence, and from 1904 up to 1908 no case of that disease was notified among the inhabitants, and the most rigorous domiciliary inspection failed to discover a single case. Their campaign against mosquitoes was systematically undertaken in 1903. But it must be noted that for a few years before that date extensive works had been carried out in Santos for improving the general sanitary conditions of the city. Those works consisted mainly in closing wells, draining ditches of stagnant water, deep drainage of the soil, straightening the courses of streams and the great enterprise of constructing the magnificent docks. Without any idea of the rôle played by the stegomyia in propagating yellow fever, those extensive works were most effectual in destroying the great breeding foci of those insects. In addition, the rigorous enforcement of the removal of rubbish put in force from 1898 concurred in diminishing greatly the number of mosquitoes. Broken bottles, old tins, and other receptacles for stagnant water, as was well known, were fruitful sources for breeding mosquitoes, and those were found in enormous quantities in the rubbish of any city. Campinas was the second city to be seriously attacked by yellow fever in the State of São Paulo. Yellow fever had not been epidemic in Campinas since 1898; in 1903 there were 20 cases with nine deaths notified, nearly all imported from Casa Branca, a town connected with Campinas by railway where a slight epidemic broke out. The reasons given for the disappearance of yellow fever in Santos were applicable to Campinas where the same measures were put in force, only being an inland town there were no dock works. The whole State of São Paulo had been quite free from yellow fever for fully five years. The last epidemic manifestation was in 1903, and in all the affected places the only measures employed for prophylactic purposes were the exterminating of mosquitoes. That was carried out by specially organised gangs of men who were instructed in the methods to be employed in seeking out and destroying the breeding-places of the insects.—Dr. W. LOUDON STRAIN said that the cities of Brazil had entered upon a new era of health since yellow fever had been attacked on scientific lines.—Dr. DANIELS said that in British Guiana there had not been any attempt to exterminate the mosquito and yet yellow fever had disappeared.—After Dr. C. F. HARFORD had spoken, the PRESIDENT commented on the immunity of the creole from yellow fever, and then Dr. RIBAS replied.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 19th, Dr. Robert Jardine being in the chair.—Sir George T. Beatson opened a discussion on the Treatment of Suppurative Appendicitis. He said that suppurative appendicitis was localised or diffuse, the latter comparatively rare. General peritonitis was not necessarily suppurative. It might be merely a sympathetic reaction of the unattacked portion of the peritoneum induced by the localised affection in the right iliac region. The intensity of symptoms was no reliable guide to the severity of local conditions. Pathological examination of diseased appendices by Professor R. Muir demonstrated that the initial mischief was not a general mucous catarrh but a small lesion in the mucous membrane by which infection had entered and made its way through all the coats of the appendix. He treated general suppurative peritonitis by

rapid laparotomy with drainage rather than by flushing out or wiping out the abdomen. Continual rectal injections of saline solution were of great importance. In treating localised peritonitis, whether suppurative or not, peristalsis was to be arrested. It hindered the localising of the inflammation. Thus all laxatives were to be avoided, a semi-starvation diet (albumin-water) was given and an opiate administered (Dover's powder). Enemata were sufficient for evacuation of the bowels. Light poultices and the Fowler position should be used. Until acute symptoms had subsided this line of treatment should be carried out and surgical interference not entertained unless the abscess pointed or other clear indication developed. When abscess formed time should be given for the formation of adhesions to the parietal peritoneum or for the pus, as invariably happened, to lose its virulence. The speaker quoted statistics from the Western Infirmary to show that 4 per cent. of all cases treated by the expectant method with the "interval operation" had died, whilst 13 per cent. of those treated by other methods had died. He considered that perforation and gangrene of the appendix did not of themselves justify operation, unless accompanied by general suppurative peritonitis, by no means a necessary sequela.—Dr. T. K. Dalziel described the ideal appendix as funnel-shaped. This condition generally obtained in children, but, especially towards puberty, the development of the muscular tissue of the colon, together with the usual fold of mucous membrane, tended to cause an abnormal contraction, whereby secretion was retained. This explained the relative infrequence of appendicitis in children and its frequence at puberty. This increased tension would either cause the obstruction to yield or a series of pathological changes would be set up which usually led to suppuration. He proceeded to give a classification of suppurative appendicitis, after which he said that during the past three years he had six deaths following localised abscess; in no case had death been due to peritonitis following operation. As regards general suppurative peritonitis prognosis could be best made from the pulse and from the general facies. The issue largely depended on the organism present. Streptococcal infection was usually fatal. Infection by bacillus coli was hopeful; mixed infection with bacillus coli communis and staphylococci was intermediate and was frequently followed by delayed secondary localised abscesses. Regarding treatment, there was no question in the cases where pus was confined to the cavity of the appendix. Immediate excision was the only safe course. Immediate operation in suppurative peritonitis was also demanded. When abscess had formed, apparently localised, it might sometimes be left till adhesions had formed, but there was a considerable danger of general peritonitis, thrombophlebitis, septicæmia, injury to internal organs, and the removal of the appendix was more difficult and so recurrences might take place. Pus, he thought, should be evacuated as early as possible and with care the peritoneal cavity could be quite well protected. He made a fairly free incision, carefully protected the peritoneal cavity with gauze and carefully swabbed out any remaining pus, concretions, or dead tissue. If necessary, the wound should be packed with gauze for four days. Regarding the statistics quoted by Sir George Beatson, there had been no mention of the stage of the disease. Probably many were cases of general septic peritonitis, the hospitals being the dumping ground for dying appendix cases.—Dr. Donald Macphail said that during 27 years of general practice he had had many cases of appendicitis. None had been operated on and none had died. No case should be treated light-heartedly. He had frequently seen cases which he had regretfully left without surgical interference (because in the circumstances that was impossible) give very satisfactory results. Some would insist that opium should never be given; he thought this cruel, and provided it was given merely to diminish suffering, not to narcotise, it was not harmful. He gave small and frequent doses of liq. morph. with tr. belladonn. combined with mag. sulph. also in small doses. The latter kept the bowel and its contents in a more healthy condition, preventing stasis and the formation of scybala by encouraging both secretions and peristalsis within safe and beneficial limits. With Sir George Beatson, he deprecated too much zeal and haste in operating and thought that many cases would get well without even delayed operation.—Dr. A. E. Maylard advocated early operation, provided all precautions were taken to protect the general peritoneal cavity. After opening the abdomen be carefully packed off the surrounding parts, wiping away the pus with pledgets of gauze as it oozed from its cavity, until the latter was quite dry, sought for and removed the appendix, freely swabbed out the pus cavity with pure carbolic acid, dusted copiously with pure iodoform, and, finally, stuffed and drained. He emphasised the importance of thoroughly removing all pus before attempting to break down adhesions to liberate the appendix. Early removal in all cases of acute appendicitis should be the usual practice and they would then never hear of appendicitis with abscess.—Dr. J. M. Renton and Dr. D. N. Knox also advocated early operation.—Mr. J. H. Pringle thought the time element was of great importance and was another point in favour of early operation. He had found vaccine treatment useful in diminishing infection. Opium should not be used unless an operating surgeon was not available.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 19th, Dr. W. H. Cheetham being in the chair.—Dr. Cheetham read a paper on the Medical Inspection of School Children.—Dr. E. F. Trevelyan read a paper on Birth Palsy, especially in reference to the distribution of the paralysis and to prognosis.—Mr. H. Littlewood showed a Columnar-celled Carcinoma growing from the anterior surface of the sacrum and invading that bone. The tumour was felt by rectal examination as a smooth, elastic mass of the size of an egg and was entirely unconnected with the bowel. No other growth was recognised in the ovary and elsewhere and the tumour was regarded as originating from the post-anal gut. The patient was a woman, aged 63 years, who had suffered from agonising sacral and coccygeal pain for several months, dating back to an injury—a fall upon the lower part of the back.—Mr. W. Thompson showed: 1. A specimen of Subacute Necrotic Pancreatitis from a woman, aged 44 years. When seen there had been five months' history of abdominal pain and vomiting, and a transverse tumour could be felt in the lower epigastric region. At an exploratory operation the tumour was found to be pancreatic, fat necrosis was observed, and the gall-bladder, which contained stones, was drained. There was considerable pyrexia. The patient died 23 days after the operation. At the post-mortem examination there was destruction of the head and part of the body of the pancreas, with suppuration burrowing into the root of the mesentery. The left half of the pancreas was apparently normal. 2. A man, aged 46 years, from whom about three-fourths of the stomach had been removed. The patient was extremely emaciated but was now improving, eating chicken, &c., 14 days after operation. There was extensive malignant growth of the pylorus extending along both curvatures. There was massive enlargement of the sub-pyloric glands, those along the coronary arteries being also involved. 3. A Recurrent Myeloid Sarcoma from the region of the coccyx, the growth being of the size of a small cocoanut. The coccyx had been removed two years before; signs of recurrence were noted six months ago.—Dr. Trevelyan showed a man, aged 52 years, with a slight Residual Paralysis in the Left Hand as a consequence of a total brachial plexus paralysis due to a dislocation of the left shoulder. As there had been no improvement for nearly a year this paralysis was looked upon as permanent.—Professor A. S. F. Grünbaum showed specimens of extensive Idiopathic and Traumatic Pontine Hæmorrhage: one from a man, aged 65 years, setting in spontaneously during work; the other from a man, aged 71 years, the result of being knocked down by a tramcar.—Dr. W. H. Maxwell Telling and Mr. J. F. Dobson showed an infant, aged 12 months, in whom a large Pancreatic Cyst, noticed since the age of nine months, had been drained successfully.—Cases and specimens were also shown by Dr. John W. Hyslop, Dr. A. L. Whitehead, and Mr. Michael A. Teale.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 18th, Dr. A. Forbes, Vice-President, being in the chair.—Dr. Ralph P. Williams, school medical officer of the city, read a paper on Medical Inspection of School Children in Sheffield. After reviewing the objects and history of medical inspection, the work done in Sheffield before the passing of the Education Act of 1907 was described. The children then attending the schools were inspected (66,590 in number). Of

these 5475 were examined and 4741 letters were sent to parents suggesting that treatment should be obtained from the family practitioner. A second letter was sent to those parents who had disregarded the first. As a result of the letters sent about 45 per cent. of the children obtained treatment. The schedule used under the new Act was discussed. It had been found that about 40 children per day could be examined by a whole-time medical officer. The question of verminous children was fully dealt with. Three whole-time school nurses had been appointed and their work was supplemented by a large staff of women sanitary inspectors. In cases where no improvement took place after two visits from the nurse the home was visited by the school medical officer and the parents warned, or if the state of the home was very bad the children were removed to a "place of safety" on a warrant obtained from the magistrates. Five families of children had been so removed since last July, the parents being prosecuted for neglect. The arrangements for treatment were described, including that with the hospitals whereby the education committee became subscribers and "recommends" were thus provided for those children who might require them.—Mr. Miles H. Phillips read the notes of a case of Dystocia due to excessive development of the child. The head was born, unassisted, in the unreduced right occipito-posterior position. Delivery of the trunk was only effected after amputation of the head and both arms, evisceration and the application of the cephalotribe to the spine. The child weighed 16¾ pounds, the excessive bulk being chiefly due to a deposit of dense subcutaneous fat, which was one and a quarter inches thick over the loins. Pregnancy had been prolonged three weeks over the calculated time. The child was living when the head was born. The mother, fortunately, had a large pelvis and her previous children had been born naturally.—Dr. Arthur J. Hall showed two cases of Bronchiectasis. One was due to the impaction of a tooth in a bronchus. The acute symptoms of septic bronchitis subsided after the stump had been vomited. The second was an old case of phthisis where the physical signs had remained the same for at least seven years. The cardiac impulse was in the axilla. In addition to the signs of cavity at the left base there were crepitations synchronous with the heart beat.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.—A meeting of this society was held on Feb. 11th, Dr. A. E. Morison being in the chair.—The first portion of the evening was devoted to an exhibition of medical and surgical cases followed by two short papers read by Dr. A. S. Percival and Dr. R. J. Willan. Dr. Percival's subject was "A Pathological Suggestion based on an Electrical Analogy," that of Dr. Willan being "Some Practical Experiences with the Urethroscope, Cystoscope, and Catheterisation Cystoscope."—The following were among the clinical cases shown: Dr. Drummond showed: (1) Two cases of Musculo-spiral Paralysis; and (2) three cases of Hemiplegia and Myasthenia Gravis.—Sir Thomas Oliver showed: (1) A case of Innominate Aneurysm; (2) a case of Lymphadenoma; (3) a case of Fibroid Phthisis; and (4) a case of Aortic Incompetence.—Dr. T. Beattie showed: (1) Locomotor Ataxia with Anterior Tibial Peripheral Neuritis; (2) Syphilitic Aortitis with Fusiform Dilatation of the Arch and Aortic Regurgitation; (3) Splenomedullary Leukæmia treated by exposure to x rays; (4) Acute Transverse Myelitis in a boy 14 years of age; (5) Hydrocephalus; and (6) Catarrhal Jaundice with Infective Choledochitis.—Dr. W. E. Hume amongst other cases showed one of Splenomedullary Leukæmia treated with x rays, one of Hodgkin's Disease, and one of Pernicious Anæmia showing great improvement by open-air treatment.—Dr. A. Parkin showed amongst others a case of Charcot's Hip-joint and Fibroid Phthisis.—Dr. R. A. Bolam showed cases of the following skin diseases: Pityriasis Rosea, Scleroderma, Hydroa Æstivale, Favus (two cases), and Tinea Barbæ.—Mr. J. Rutherford Morison showed: (1) An old man with a Gluteal Aneurysm which was being successfully treated by injections of tincture of perchloride of iron into the sac; and (2) a case after the Repair of a Ruptured Duodenal Ulcer followed by a Gastro-enterostomy.—Mr. W. G. Richardson showed a young female from whose gullet he had removed a False Palate and Tooth by œsophagotomy.—Dr. J. V. W. Rutherford showed two cases where large areas had been successfully skin-grafted by the method of Thiersch.—Dr. A. M. Martin showed: (1) an Epithelioma of the Heel; (2) Sarcoma of the Leg; and (3) a huge Intramuscular Lipoma of the Thigh.—Mr. John Clay showed: (1) An elderly female with an obscure Pulsating Tumour at the Root of her Neck which was probably an aneurysm of the first part of the subclavian artery; and (2) Dislocation at the Hip-joint reduced five weeks after injury, the patient being allowed to get up on the third day, and being now in full work.

ULSTER MEDICAL SOCIETY.—A meeting of this society was held on Feb. 18th, Dr. T. S. Kirk, the President, being in the chair.—Dr. W. Calwell introduced a discussion on Ulcer of the Stomach, and dwelt on the following points: frequency, age of incidence, sex, pathology, site, types or varieties, short observations on ordinary symptoms, complications, differential diagnosis, treatment, prophylaxis—early, operative—in chronic cases of hæmorrhage. Dr. Calwell drew attention to the marked rise in the age incidence of ulcer in the female sex during adolescence; this accounted for the preponderance in the female, a preponderance that did not hold at any other age; in the adolescent female it was probably a symptom side by side with chlorosis, not a result of chlorosis. He also said that the self-protection of the mucous membrane of the stomach from its own digestive juice was a function of this membrane, quite as much as the motor, secretory, or absorptive functions. It was well known and acknowledged that these latter functions were perverted or annulled by such conditions as gastritis, nervous influence, migraine, and other affections, and where careful inquiry was made it was surprising how often some strong nervous influence, such as migraine, or some alimentary infection was found to be concomitant with, if not actually previous to, the onset of ulcer. They could even form types of ulcer from the presence of such affections, such as the central or nervous type, the migraine, the infective. Some remarks on moot points in diagnosis and in treatment were also made.—The discussion was adjourned until the next meeting.—Dr. W. J. Maguire showed a case of Acromegaly and read notes of the case.—Captain G. J. Stoney Archer, R.A.M.C., showed a case of Irritable Heart in a soldier. He also showed a case of Injury to the Brachial Plexus following Fracture of the Clavicle, successfully dealt with by operation.

ROYAL MEDICAL SOCIETY OF EDINBURGH.—A meeting of this society was held on Feb. 26th, Dr. J. Gilmour being in the chair.—Dr. Laurance described a case of Hyperemesis Gravidarum of the toxæmic type. The case presented several features of especial interest. The vomiting did not commence until the middle of the sixth month of pregnancy; it responded to treatment but only to commence again when the patient left hospital and it ceased altogether as soon as delivery took place. Dr. Laurance discussed the three varieties of hyperemesis—the reflex, the neurotic, and the toxæmic. An important point was raised with regard to the exact time when abortion or premature labour should be induced.—Dr. F. E. Reynolds then described a case exhibiting the symptom complex of the spinal form of progressive muscular atrophy combined with a posterior root affection. Diagrams were shown depicting some of the chief phenomena presented by the patient. After showing the patient Dr. Reynolds discussed the condition, especially considering the differential diagnosis.—Dr. Greenfield congratulated Dr. Reynolds on his address, and hoped that this would serve as a model for members bringing forward cases in the future.—The discussion which followed was mainly occupied with a consideration of the primary etiological factor in the condition.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on March 1st, Sir James Crichton-Browne being in the chair. Sir George Wyatt Truscott, the Lord Mayor of London, and Mr. T. H. Openshaw were elected members among others. The special thanks of the members were returned to Mrs. Wigan for her donation of 10 guineas to the fund for the promotion of experimental research at low temperatures. The honorary secretary reported the death of Professor Julius Thomsen, the distinguished Danish chemist, and an honorary member of the institution, and a resolution of condolence with the family was passed.

Reviews and Notices of Books.

Diseases of the Heart. By JAMES MACKENZIE, M.D. Edin., M.R.C.P. Lond. London: Henry Frowde; and Hodder and Stoughton. 1908. Pp. 386. Price 25*s.* net.

ONE of the main sensations which we experienced in perusing this work was that of surprise, mixed with admiration, that such valuable and original work could be carried out during the routine of general practice. Dr. Mackenzie's special object in undertaking to write the book was to ascertain the mechanism by which the symptoms occurring in diseases of the heart are produced, to find out their relationship to organic changes in the heart, to ascertain their prognostic significance, and, finally, to employ them as a guide for treatment. This line of observation revealed many new and unexpected features which he has duly recorded. He states in his preface that it may appear that an unnecessary amount of attention has been devoted to details, many of which can only be recognised by special apparatus. But to bring conviction of his contentions proof had to be elaborated. We found his descriptions anything but tedious, and derived much information that was full of interest.

Wealth of detail is the distinguishing characteristic of the book. For instance, the author shows that many of the seemingly trivial signs, such as the minute differences in the size of a pulse beat, or a slight delay between the auricular and ventricular systoles, are really of vital importance in revealing changes which have been proved to be due to very definite affections of the heart. In the same manner the study of irregularities is of the greatest service, as their presence is easily detected and their significance has never been properly understood. Dr. Mackenzie maintains that a close study of irregularities throws an unexpected light upon the functional derangements of the heart and affords grounds for an intelligent diagnosis upon which a rational treatment and prognosis can be based.

The first three chapters are occupied with certain points underlying the production of heart failure and with a brief survey of the anatomy and physiology of the heart. It is pointed out that "heart failure" is simply inability of the heart muscle to maintain the circulation, and that this failure of the heart muscle is due to a disturbance of the normal adjustment of the various factors concerned in the circulation. This disturbance may, of course, arise in a great many ways, but the ultimate result is the same—embarrassment of the heart muscle and its final exhaustion. We quite agree with Dr. Mackenzie, therefore, in his statement that the heart muscle is of such prime importance in what is known as heart failure that a close and intimate investigation of its properties is essential. The results of such a labour are excellently recorded in the work now before us.

After a minute study of the symptoms of heart failure he is convinced that the explanation of its occurrence can be summed up in the general statement that it is due to the exhaustion of the reserve force of the heart muscle as a whole or of one or more of its functions. He admits that it is not easy to define the term "reserve force," and he thinks that physiologists do not seem to have given it the study which its importance demands. Although difficult to define, he submits its existence is proved in every movement of the body and in every effort which is made, as it is by the possession of this quality that all forms of effort can be undertaken with ease when the organ is healthy. The estimation of the amount of reserve present is the best test of the heart's condition. It is the premature exhaustion of this reserve which constitutes heart failure, and it is the heart's power to regain this reserve force on which recovery from heart failure depends. Dr. Mackenzie then goes on to suggest that the ideal method in writing a book on diseases of the heart would be to take up each separate lesion and describe the symptoms that arise in consequence of the lesion. But although this method is the one which has been attempted by most writers of text-books on this subject, he considers it impracticable in the present state of knowledge. This contention may fairly be supported, for not only are the lesions imperfectly recognised but the symptoms themselves are usually not the outcome of the organic lesion but result from the embarrassment of the heart induced by the lesion. Thus the symptoms of heart failure in a case of valvular disease are not produced by the valve action but by the failure of the heart muscle to overcome the difficulty created by the damaged valve, and this failure may be brought about in a variety of ways by the greater exhaustion of one function than of another. The respiratory symptoms arising in the course of cardiac affections are well described and the chapter devoted to this part of the subject may be studied with advantage.

A particularly interesting chapter is the one devoted to a consideration of the venous pulse. Dr. Mackenzie rightly points out that when the apex beat is observed or the characters of the arterial pulse are analysed the purview is limited almost entirely to the doings of the left ventricle. The arterial pulse gives a direct knowledge of the action of the left ventricle during but a portion of the cardiac cycle, throughout the period when the aortic valves are open. When they are closed it is difficult to know what is happening in the left ventricle. In the venous pulse there is often the direct means of observing the effects of the systole and diastole of the right auricle, and of the systole and diastole of the right ventricle. The venous pulse therefore presents a greater variety of features and may manifest variations due to disease which the study of the arterial pulse fails to reveal. The methods of recording the jugular pulse are described as are also the various points which should be noticed in analysing a tracing. The remarks on the conditions giving rise to a venous pulse are worthy of note. Unfortunately, no definite conclusions can yet be arrived at, but a large field for observation and research is left open.

Having sufficiently indicated their general scope, we can congratulate the author on the success of his labours and on having given to the profession a treatise on disease of the heart written from an original standpoint. The one matter for regret is that the sections dealing with treatment are not so full and do not contain such valuable information as do the other portions of the work. Doubtless in a future edition this defect will be remedied.

Les Attentats aux Mœurs. (Offences against Morality.) Par P. BROUARDEL, Professeur de Médecine Légale de la Faculté de Médecine de l'Université de Paris; Membre de l'Institut et de l'Académie de Médecine. Préface du Professeur Thoinot. Paris: J. B. Baillière et Fils. 1909. Pp. 231. Price 5 francs.

THIS volume, containing the lectures which Professor Brouardel commenced in the session of 1906 at the Paris School of Medicine but which he did not live to complete, is the last of a series of very notable contributions to the literature of forensic medicine. The book has been edited by one of the author's most distinguished pupils, Dr. Thoinot, who, it may be remarked, possesses a further qualification for the task in the fact that he has himself written a valuable treatise on this very subject of sexual crime. Owing to the unfinished state of the materials left by the author the present work has necessarily a somewhat

rough and imperfect form, which quality, however, in the judgment of the editor preserves in it a flavour of personality which would probably be destroyed by any effort to improve its dress. Dr. Thoinot has supplemented the lectures by an appendix containing notes of a number of selected cases in Professor Brouardel's practice, and these illustrative observations, which even more clearly than the text of the lectures are stamped with the characteristic qualities of the author's work, form perhaps the most valuable part of the book.

After an introductory chapter, in the course of which reference is made to the fuller recognition accorded nowadays to the influence of mental disorders in the causation of sexual offences, the author passes on to the consideration of the different varieties of this class of delinquency. Indecent exposure (*outrage public à la pudeur*) is dismissed in a few paragraphs as a phenomenon mainly interesting the alienist; some judicious counsel is also given as to grounds for forming an opinion in the cases where the existence of genito-urinary disease is set up as a plea in defence. In the succeeding chapters the author treats of indecent assault, rape, and false charges of assault. The various difficulties that may be encountered by the medical man who has to deal with cases of this nature are fully and lucidly described, and are illustrated by pertinent clinical observations. The author is particularly emphatic with regard to the importance of remembering the wide difference between the clinical and the medico-legal standards of proof, and his weighty and temperate remarks on this point are deserving of special attention. They are admirably enforced by the author's own practice as displayed in the reserved and prudent tone adopted in his medico-legal reports, some 36 of which are given *in extenso* in the appendix.

While the book does not contain very much that is novel, it admirably fulfils its rôle as a safe and precise guide to the student and the practitioner who may be called on to deal with what are in many respects the most difficult and responsible problems in medico-legal work.

Lectures on the Pathology of Cancer. By CHARLES POWELL WHITE, M.A., M.D. Cantab., F.R.C.S. Eng., Pilkington Cancer Research Fellow. Manchester: Sherratt and Hughes, University Press. 1908. Pp. 83. Price 3*s.* 6*d.* net.

THESE lectures were delivered in June and July, 1908, in connexion with the Pilkington Cancer Research Fund and they certainly deserve publication, for they contain much that is interesting and valuable. Dr. White uses the word cancer as synonymous with malignant disease and nowadays this is quite justifiable. He employs the modern definition of a tumour that it is a mass of organs, cells, or tissues atypically arranged and serving no useful purpose, and he gives a workable, if elaborate, classification of new growths. The tumours composed of cells arranged atypically belong to his third class and he calls them cytomata and in this group are the sarcomata and the carcinomata.

In the second part Dr. White discusses the mode of growth of cancers and in the third part he enters on the difficult subject of their causation. In a single page he discusses the extrinsic causal factors, though he devotes an appendix to the consideration of the parasitic theory. We have not space to discuss fully all the arguments which the author brings forward to show that cancer cannot be parasitic in origin, but we may notice a few. Dr. White says that if cancer were due to a parasite we should expect infection of one person by another to be of frequent occurrence. This is not quite a convincing argument, for it is only necessary to mention leprosy as an example of a disease undoubtedly microbic in origin, in which it is extremely difficult to point to specific cases of direct infection. Further, he claims that the theory will not explain the origin of cancer, for we know of no parasites which are capable of producing a primary proliferation of cells. Of course, we do not at present know any such parasites, and if we did the whole question of the etiology of cancer would seem to be answered, but we must not make too much of a position dependent upon a negative system of proof. Dr. White considers that a parasitic origin will not explain why the small intestine is so rarely the seat of primary carcinoma. We imagine that the parasitic theory explains it very well. The portions of the alimentary canal which are likely to be affected by carcinoma are those where there is a sudden diminution of lumen or a permanent sharp turn, for at these places the mucous membrane is liable to be injured by the intestinal contents and a way made for the invasion of the supposed micro-organism. Therefore, we find carcinomata to be common at the junction of the pharynx and œsophagus, at the cardiac and pyloric openings of the stomach, but from the pylorus to the ileo-cæcal valve carcinoma is very rare, and no sudden alteration in the size of the bowel occurs. At the ileo-cæcal valve it becomes common again, and it is found at the hepatic and splenic flexures of the colon, at the junction of the iliac and pelvic colons, and at the last abrupt turn of the rectum a short distance from the anus. Dr. White appears to find some difficulty in the fact that metastatic growths always resemble the primary growth; but metastatic growths are due to translated cancer cells, and on the parasitic theory the cancer cell carries the parasite within itself. We have no wish to insist on the parasitic theory—on the contrary, it must be admitted by all that recent investigations point the other way. But there is much to be said on both sides, and it would be well in any future issue of the book, unless some discovery has made definite statement safer, to set out more fully the arguments both for and against the parasitic theory.

The fourth part is occupied by the consideration of the bearings of pathology on treatment, and here we get the clearest statement of Dr. White's opinion of the cause of tumour formation. The essential causal factor is, he believes, the continued removal or diminution of the influences which restrain proliferation. He recapitulates all the conditions which appear to favour cancer growth and he points out how the knowledge of these may be utilised in treatment.

Text-book of Physiological Chemistry. By EMIL ABDERHALDEN. Translated by WILLIAM T. HALL, Instructor in Chemistry, Massachusetts Institute of Technology, and GEORGE DEFREN. First edition. New York: John Wiley and Sons; London: Chapman and Hall, Limited. 1908. Pp. 722. Price $5.00 net (21*s.* net).

Lehrbuch der Physiologischen Chemie. Von E. ABDERHALDEN, O. Professor der Physiologie an der Kgl. Thierärzlichen Hochschule, Berlin. Zweite Auflage. 19 Figuren. Berlin and Wien: Urban und Schwarzenberg. 1909. Pp. 984.

TWO and a half years have elapsed since the first edition of this work was published in Germany. In this short time great developments have taken place, more especially in the pathology of the metabolism of the cell; plant physiology has extended much, and so have the confines of physiological chemistry. The general plan of the German work has been retained in the translation and the matter is set forth in these lectures. Four lectures are devoted to the carbohydrates, one to fats, six to proteins, one to nucleo-proteins and their derivatives, two to the relations between carbohydrates, fats, and proteins, four to inorganic foodstuffs, and one each to oxidations and ferments. To the functions of the intestinal canal and its

glands two lectures are devoted, to the blood and lymph two, to excretions one, and to the inter-relation of organs one. The metabolism as a whole is dealt with in three discourses, and the last two lectures deal with what the author calls "Ausblicke" or "Outlooks." We may consider along with the second German edition the first American edition. The American translators have rendered useful service by translating this work but we wish that all the new matter in the German second edition had been incorporated in the American edition. Here and there in the American edition we meet with some strange misprints; even in the translation of the author's preface we find Asho for Asher when dealing with the well-known "Ergebnisse der Physiologie" of Asher and Spiro. Keratin is presented as ceratin, which is incorrect. To read the American text would have been easier if the lines had been shorter and the whole page broken up by the use of bold type here and there to indicate the important subjects. These are minor matters but still important considerations. On comparing the second German edition with the American we find that there are 32 lectures in the former and 30 in the latter. A special lecture (XVIII.) is given to the all-important question of "the theory of solution and the specific functions of ions" and an additional lecture is added (XXX.) on "General Metabolism." The references also are fuller in the German text. There are no illustrations in the American edition.

This is perhaps the fullest modern work on physiological chemistry. The carbohydrates and other groups, for example, are not only considered in their chemical relations but their whole history, uses, metabolism, and transformations in the body are fully set forth; their pathological relations and the part which they play in disease are linked up with their normal physiology and metabolism both in plants and animals. The chapters on the Proteids are particularly valuable and all the modern work is incorporated and criticised and yet "we are still incapable of interpreting the significance of the albumins as food for the animal organism. ..... Here stands a group of ferments with no tangible support ..... all are anxiously waiting the solution of the problem of the constitution of albumin." The work which lies before the physiological chemist, and which is being so brilliantly carried on in scores of laboratories, could not have been better summarized.

Where all is so well and carefully done it is scarcely necessary to specify any particular lecture. Every lecture is thorough and most suggestive. Not the least valuable parts are those in which the theories are submitted to a careful criticism, a matter of great importance when new facts are likely to be woven into premature theories. Close attention is devoted to the importance of inorganic foods, following somewhat on the lines of Bunge. The new lecture on Solutions and Ions is particularly valuable and so are the discussions on oxidations and fermentations. The whole of the work on digestion has been thoroughly overhauled in the light of recent research and is thus brought up to date. There are some figures in the text to illustrate the views of Pawlow on digestion, but the illustrations are not the strong point in the book. The last two discourses on "Outlooks" we found deeply interesting. They deal with, amongst other questions, the following: the "biological reaction" in relation to species, "precipitins," and the work of Nuttall is incorporated; heredity; Mendelism (with illustrations); the mutations of de Vries; antiferments; acquired immunity; specific protective agents; the theories of Paul Ehrlich; and other of the new problems which advancing knowledge has thrust on us. But we have said enough to show how intensely interesting is the whole book. It is a mine of information. It is by far the best work on its manifold subjects with which we are acquainted. The view and outlook are broad, comprehensive, and critical, and we cordially commend its perusal to practitioners and teachers, as well as to students of chemical physiology, the bearings of which on the wide and ever-growing problems of biology grow daily more intimate.

LIBRARY TABLE.

A Practical Text-book on Infectious Diseases. By R. W. MARSDEN, M.D. Vict., M.R.C.P. Lond., formerly Medical Superintendent, Monsall Fever Hospital. With a chapter on Puerperal Septic Disease by A. KNYVETT GORDON, M.A., M.B. Cantab., Medical Superintendent, Monsall Fever Hospital. Manchester: At the University Press. 1908. Pp. 296. Price 5*s.* net.—This book aims at giving a practical account of the various infectious diseases, suitable for ready reference in everyday work, and the author has, on the whole, succeeded admirably in his attempt. The accounts given of the different infective fevers are clear and adequate, while special attention is paid to diagnosis and treatment. The list of affections dealt with includes practically all those commonly met with in this country, though we do not quite understand why glanders is omitted when anthrax is included. Syphilis and gonorrhœa are not mentioned, being presumably looked upon as "contagious" rather than "infectious" in the popular use of the terms, while Mediterranean and yellow fevers are omitted probably as foreign diseases, but relapsing fever is dealt with, though we do not think it is now met with in this country. There is a brief chapter on tuberculosis from the point of view of the sanitary officer, advocating a short period of treatment in a sanatorium as an educational measure. Dr. Knyvett Gordon advocates curetting the uterus in cases of septic infection and is inclined to advise early injection of antistreptococcic serum as being possibly useful and in any case harmless. We have noticed a few misprints, among which we would fain include "punctae" for puncta.

Glanders. By WILLIAM HUNTING, F.R.C.V.S., Chief Veterinary Inspector to the London County Council. London: H. and W. Brown. Pp. 100 and 14 coloured plates. Price 10*s.* 6*d.* net.—The name of the author is well known as an authority on glanders, and the work under review will be the standard work of reference on this dreadful scourge of the equine world for many a year, if we mistake not. From a life-long experience of glanders Mr. Hunting has condensed into the comparatively small space of 100 pages the closely made observations which he has from time to time recorded, and the summaries thus made are enhanced in value by the addition of 14 fine coloured plates. The latter are so beautifully true to the natural specimens, for which all due praise must be given to the artist, that even a layman could scarcely fail to recognise the disease if once brought in contact with it. The subject is treated from every point of view which is likely to be of value and this small book is equally of interest to members of the medical and veterinary professions. No medical officer of health and no hospital library should be without it.

JOURNALS AND MAGAZINES.

Annals of Ophthalmology. Edited by WILLIAM T. SHOEMAKER, M.D., assisted by C. W. PARKER, M.D., and a Staff of Ophthalmologists. Vol. XVIII., No. 1. January, 1909. St. Louis, Missouri: Jones H. Parker. Price per annum 18*s.*—The principal articles in this number of the *Annals* are: 1. Hereditary Blindness and its Prevention, by Clarence Loeb, M.D. St. Louis. This article is the first part of an investigation begun by Dr. Loeb and contains the

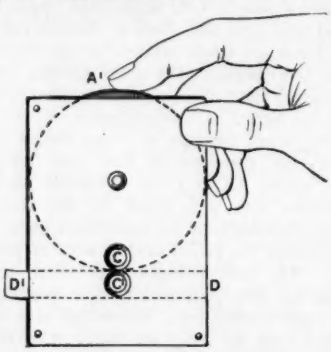
family history of 70 families in which hereditary blindness was present. 2. Some Comparisons between the Eyes of Insects and of Man, by Philip P. Calvert, Ph.D., of Philadelphia. This is an interesting article. 3. The Ophthalmic Origin of Otic Disturbances with the Cerebellar Control of the Eyes, by F. Park Lewis, M.D., of Buffalo, N.Y. This article should be read by otologists and ophthalmologists alike. 4. Beginning Signs of Retinal Angio-sclerosis, by Wendell Reben, M.D., of Philadelphia. 5. Gross Obstructive Vascular Disease in the Retina, by C. M. Harris, M.D., Johnstown, Pennsylvania. 6. Embolism of a Macular Artery and Thrombosis of Superior and Inferior Retinal Arteries in a Case of Embolic Softening of the Brain, by William T. Shoemaker, M.D., of Philadelphia. This article has some good illustrations. The number contains the usual abstracts from foreign ophthalmological literature.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XXXVIII., Nos. 2 and 3. London: C. F. Clay. Feb. 9th, 1909. Price 8*s*.—The contents of this number of the *Journal of Physiology* are: 1. The "All or None" Contraction of the Amphibian Skeletal Muscle Fibre, by Keith Lucas, Fellow of Trinity College, Cambridge. Mr. Lucas has taken the cutaneus dorsi muscle as the subject of his experiments on account of the small number of motor fibres by which it is supplied. He shows that when a series of stimuli of increasing strength is sent into the nerve the muscle contracts by a few definite steps apparently to the excitation of another nerve fibre or group of nerve fibres of like excitability. Hence he concludes that in each muscle fibre the contraction is always maximal regardless of the strength of stimulus which excites the nerve fibre. The skeletal striated amphibian muscle cell therefore resembles the cardiac striated muscle cell in the property of "all or none" contraction. 2. Experimental Studies in the Innervation of the Skin, by Wilfred Trotter, M.S.Lond., F.R.C.S.Eng., assistant surgeon, University College Hospital, and H. Morriston Davies, M.C. Cantab., surgical registrar, University College Hospital. These important investigations are dealt with at p. 704 of our present issue.

New Inventions.

THE ROTARY HÆMOGLOBINOMETER.

THE value of a quantitative estimation of hæmoglobin, either alone or as part of a complete blood examination, is generally recognised. So far, however, it is not made use of by the bulk of the general practitioners in this country to the extent that it might and ought to be. One cause of this is undoubtedly the length of time involved in making such estimations. Any method which reduces the time and simplifies the apparatus required is likely to increase its use in general practice—that is, provided it is reasonably accurate and reliable. No method could be devised which would exceed in simplicity of apparatus and rapidity of performance that suggested by Tallqvist in the well-known form of the "hæmoglobin-scale" books. But, like other methods, it has its defects, and according to some who have tried it those defects are such as to make it unreliable. It is with the view of diminishing or removing some of the sources of error in a method which presents so many clinical advantages to the general practitioner that I bring forward the rotary hæmoglobinometer. It is founded on the same principle as the hæmoglobin scale of Tallqvist—namely, the saturation of a piece of absorbent paper with pure blood and its comparison with a set of artificial standard tints representing normal blood and its dilutions. The apparatus (see figure) consists of a rotating metal disc, on the front surface of which the standard colour tints are arranged at intervals near the circumference, whilst the percentage numbers corresponding to each tint are similarly arranged on its posterior surface. The disc is encased between two rectangular plates of ebonite (size $2\frac{1}{4} \times 2\frac{1}{2}$ inches) each of which has a small round hole (C in front plate) in it corresponding with that part of the circumference of the revolving disc upon which the colour tints and percentage numbers are respectively situated. When the disc is rotated by the forefinger (A′) the successive standard tints in turn completely fill the hole in the front plate, whilst on turning the instrument over the corresponding percentage of hæmoglobin which that tint represents can be read off through the hole in the posterior ebonite plate. The illustration above shows the general arrangement as seen from the front. Close beside the hole C there is a second hole in the front plate of the same size and shape (C′). By means of a narrow space between the two plates (D and D′) a slip of absorbent paper can be pushed in as at D′ so as completely to occupy the hole (C′).



Method of use.—After pricking the finger or ear of the patient whose blood is to be examined a slip of absorbent paper is torn out from one of the small books of slips provided with the instrument and a good sized drop of blood is carefully blotted up at one end so as to make a stain larger than the size of the opening at C′. The slip is then pushed into the slot D′, so that the blood stain fills up the hole C′. The disc is then revolved by its projecting milled edge at A′ until the tint is found with which it most nearly corresponds. The instrument is then turned over and the hæmoglobin percentage read off through the hole in the under surface. The advantages which this instrument offers for the busy practitioner are: 1. Its small bulk. 2. The absence of all glass apparatus or liquids. 3. The ease with which the colours can be compared owing to: (*a*) the exactly similar size and shape of the two areas of colour to be compared; (*b*) the absence of any other colour from the visual field whilst making the estimation; this is obtained by having the upper ebonite plate of a uniform dull black; and (*c*) the absence of any knowledge as to the actual percentage of the various tints until after the comparison has been made. This last advantage is a very real one, for, as has been pointed out by Sahli, the unconscious influence which a knowledge of the percentages may have upon the examiner at the time of comparing the colours is not inconsiderable. Sahli has to a certain extent met this difficulty in his modification of the Gowers hæmoglobinometer, but by means of the rotary hæmoglobinometer, on account of the various tints being arranged in a circle, this particular object can be more completely attained than by instruments of other shapes. If one has just made an estimation and ascertained the percentage of any particular tint, it is only necessary to rotate the disc again out of sight to be able to repeat the examination without in the least knowing the position of the scale. The standard tints can be used with ordinary daylight only.

The instrument has been made at my suggestion by Mr. T. Hawksley, 357, Oxford-street, London, W., to whom I am greatly indebted for the great pains he has taken in preparing an original standard set of colours, which seems very satisfactory, and for the neat and compact instrument which he has evolved from my crude suggestions. The whole case containing needles, rotary hæmoglobinometer, and books of slips, can be easily carried in the pocket.

The University, Sheffield. ARTHUR J. HALL.

THE LANCET.

LONDON: SATURDAY, MARCH 6, 1909.

The Socialisation of Medicine.

THE most eloquent of the great divines of the seventeenth century, Dr. SOUTH, gave to one of the best known of his sermons the title "On the Terrible Imposture and Force of Words," and devoted it to illustrations of the way in which men deceive themselves with regard to the real character of their actions by labelling them with such names as may be convenient for the moment. A preacher of very different kind, CHARLES DICKENS, teaches a somewhat similar lesson through the instrumentality of CHARLEY BATES, but it can hardly be said to have sunk deeply into the public mind. We may see every day that profound errors with regard to the realities of things are perpetuated by misleading nomenclature; and there can be few better illustrations of the fact than that the inevitable extension of the domain and of the authority of State medicine has come to be spoken of as its "socialisation," and to be treated as if it had something in common with the elusive suggestions which make up the mass of what is properly known as "Socialism." If any definition of "Socialism" as a system of government be possible it must be one which embraces the idea of collective production for collective benefit, to the exclusion of further personal interest in the matter than that every individual of the community should receive, as his rightful share of the distribution, a sufficiency of necessaries; and it would be a condition in which superfluities would cease to exist, because nobody would either derive any personal benefit from producing them, or would be able to claim them from others as a right. The real "Socialists," however, if there be any of this pattern, must not describe as "Socialistic" a variety of arrangements, some of them of a highly desirable character, by which many of the evils which afflict the community might be mitigated. In this way, by reason of "the terrible imposture and force of words," some people have come to consider that society is taking steps towards the acceptance of genuine "Socialism" as a system; when, in reality, it is merely extending, often in an eminently desirable manner, the proper functions of government. We have had these reflections forced upon us by various recent publications and discussions, among which prominence should be given to two excellent papers by Dr. G. C. BELCHER, in the *Midland Medical Journal* for September and October last, and to the discussion started by Mr. BERNARD SHAW before the Medico-Legal Society and reported in our last number. We mean no disrespect to Mr. BERNARD SHAW when we suggest that it is not always easy to discover to what extent he intends himself to be taken seriously; but in the case of Dr. BELCHER no such difficulty exists, and our Birmingham contemporary has done good service in giving publicity to his thoughtful and interesting articles.

The extension of the province of State medicine to cover large tracts of administration which have not hitherto fallen under its control is clearly inevitable, and must lead in time to a much larger employment of the medical profession in the service of the State than has hitherto been customary. The reason clearly is that the limitations of that province, which were formerly accepted without question, are limitations due mainly to ignorance, and must in time disappear before the extension of knowledge. The first duty of the State, and many individualists think its only duty, is the protection of the persons and the property of the governed; and it was manifest, in a very early stage of civilisation, that the proper discharge of this duty implied the suppression, so far as might be possible, of the armed highwayman and the armed burglar. It is now fully recognised, by those who have studied and understand the questions at issue, that the school child in an early stage of diphtheria, or the syphilitic prostitute in the street, is just as much a source of public danger as the highwayman or the burglar; and that the governed have just as much right to expect protection against the former as against the latter. In the case of diphtheria, or disease of similar character, the right is perhaps more obvious than in the case of syphilis, but it is in no respect more real. It is easy to say that only the immoral incur danger, but this is of no importance to the issue. As a matter of fact, a certain percentage of people are immoral, and their immorality should be reckoned with by the State as a mere element in the question with which authority is called upon to deal, that question being the effective protection of the community. We are beginning to learn that the health of the individual is a governing element in the strength of the country, and the first and most elementary duty of patriotism is to husband and to increase that strength by all practicable means. Let us consider for a moment what would be gained in the way of the self-respect of the nation, in the power of speaking with enemies in the gate, if by any increased stringency of legislation or of government we could abolish the loafer at street corners, could send the lazy to penal colonies, and could see that the children who are to be the support of the coming generation were taught to use their hands and their brains under wholesome conditions of activity instead of being compelled to muddle themselves over work which they seldom understand and which would have no permanent utility for them if they did. The future of the human race will be with the peoples who first learn to apply physiology and hygiene to the conduct of life; or, in other words, with those who first emancipate themselves from the control of ignorance and who attach due weight to the counsels of knowledge. The Japanese have given all other nations a lesson in the effects of these counsels upon the conduct of war; but we have yet to wait for the enlightenment which would apply them also during peace. The Roman valued the humblest citizen as a *proletarius*, who, if he could do nothing else, could at least produce children for the future defence of the commonwealth; but we, in the twentieth century, have as yet hardly realised the degree in which

the offspring of the slums may become sources either of strength or of weakness to the country or of the extent to which wise laws and sound administration may influence the result.

We are manifestly face to face, as both Dr. BELCHER and Mr. BERNARD SHAW have perceived, with a large increase in the employment of the medical profession by the State; and it is clearly our business so to approach the changing conditions as to do all in our power to render them fruitful of benefit to those who are affected by them. We must insist upon the right of responsibility to be invested with commensurate power; and must steadily decline to occupy positions in which the recommendations of the proper medical official may be ignored by an ignorant authority. The great enemy to be contended against is the ignorance, usually unsuspected by themselves, of large numbers of legislators and, probably, of the great majority of the classes from whom local administrators are at present selected by the votes of constituencies no better informed than themselves. The resulting boards may, and generally do, desire to do right, but their education leaves them impervious to the simplest truths of science and held in the adamantine grip of prejudice. Through bodies thus constituted the percolation of truth will be extremely slow, but nevertheless it will in time occur, and if means were taken to call public attention to the consequences which ultimately followed from every dereliction of local duty a mass of evidence likely to carry conviction would be slowly piled up against evil-doers. No one, unless it be a few medical officers of health and other professed students of the questions at issue, can form even a conjecture of the loss to the nation, in population, in intellect, and in stamina, which the present reign of ignorance involves; or, in other words, of the extent to which evils that all deplore would be remediable even by the proper application of existing knowledge. Among these evils may probably be numbered a large proportion of the maladies for which paying patients now seek medical advice; and hence it is practically certain that any considerable extension of the province of State medicine would be followed by a corresponding diminution in the demands made upon private practitioners and upon hospital officials; and it is at least likely that many relations which are at present troubled would tend to clear themselves spontaneously. We do not in the least agree with the view that a medical practitioner is a "tradesman" because, in the first place, there is no real analogy between skill and merchandise, and because the exercise of the former is seldom tainted with the conditions referred to by the Son of Sirach: "A merchant shall hardly keep himself from doing wrong; and an huckster shall not be freed from sin."[1] But any lessened demand there may be upon medical service, as now constituted, will be gradual, and members of the medical profession will have time to adjust themselves to the new order of things. We think that the revolution which seems to be impending over the medical profession is likely to accomplish itself almost imperceptibly, and that it will eventually add alike to the material prosperity and to the social consideration of those whose positions will be affected by it.

[1] Ecclus xxvi. v. 29.

The British Medical Benevolent Fund.

A MONTH ago we pleaded for an increased interest in the work of the British Medical Benevolent Fund amongst the profession whose necessities it exists to relieve, and a fortnight later we reported an influential meeting held at the Royal College of Physicians of London when the BISHOP of OXFORD and the LORD MAYOR of LONDON spoke on behalf of the Fund after Dr. SAMUEL WEST, the honorary treasurer, had made a statement of its objects and its methods of working. We hope that this report did not escape the notice of even the busiest of our readers, for it is the busiest of them who may be expected to respond most liberally to its representations. But as some may not have read it and others may have had their interest aroused in the work of the Fund, and yet may have let the occasion slip for giving it their practical support, we make no apology for again advancing its paramount claims on the generosity of medical men, for there is unique authority for believing that all may be gained by importunity. We need not repeat in detail Dr. WEST'S recent statement, but will call to mind that the British Medical Benevolent Fund was inaugurated in 1836, since which time £70,000 in grants and £80,000 in annuities have been collected and distributed. All cases are carefully inquired into with the assistance of the Charity Organisation Society and the list is annually revised, whilst the costs of administering the Fund amount to no more than 7 per cent. of the sums distributed. There is one side of the work, however, that affords grave anxiety to the trustees of the Fund and on which we wish to dwell more especially. No candidate is eligible for an annuity until past the age of 60 years, yet sickness or other undeserved misfortune often threatens a medical man with ruin at a much earlier age. Some of the most distressing cases with which the Fund has to deal are of this nature and means for their relief have to be found in the subscriptions and donations of the year. This sum is subject to such fluctuations that it can never be forecast with accuracy. It is obvious that the only manner in which the usefulness of this grant department of the Fund can be safeguarded is by a guarantee of annual subscriptions amounting to a very substantial minimum. We ask our readers to assure that minimum both by their own contributions and by putting the claim of the Fund when occasion offers before the charitable public, which they may do with an easier mind when they remember the enormous amount of gratuitous assistance given to the public by the medical profession.

In THE LANCET of Feb. 20th we published a letter from Dr. SEYMOUR TAYLOR in which he held up to his brethren the example set by the commercial travellers of the country in their nightly contributions of a small sum towards the schools of their fraternity at every dinner table "upon the road." Dr. TAYLOR makes the modest suggestion that a like trifling tax should be self-levied on occasions when medical

men meet together for such social purposes as the numerous public dinners which they hold throughout the country during the year. If a man is going to pay ten shillings for his dinner it should be a comfortable action for him to give a shilling to alleviate the bodily needs of a professional brother who has fallen upon evil days or to help the family of one who has gone under in the struggle without having succeeded in leaving any provision behind. The case of a labourer out of work is distressing enough, but is it more pathetic than that of a man of education and refinement drifting faster and faster into penury? And it hardly needs saying that when a medical man becomes once tainted with the appearance of financial distress the better class of his patients will often fall off with increasing rapidity until the closing of the vicious circle of misfortune puts an end to his career. A few weeks ago an old medical man who had spent many years in the honourable and useful conduct of his profession died in a London workhouse infirmary. However bad times may be, we believe devoutly that such a thing could never have happened if even a few of the medical men of London had known of his destitution. The British Medical Benevolent Fund exists to prevent the occurrence of like tragedies, but it can only carry on its campaign of mercy effectively if it is supplied liberally with the sinews of war. We have entered upon the observance of Lent, and we are tempted to mention it, being mindful that not a few of our readers will during this season be stirred by pulpit exhortations to the remembrance that almsgiving is not a matter of an emotional response to an eloquent appeal but a prime obligation upon all who profess and call themselves Christians. The British Medical Benevolent Fund affords a channel through which this obligation may be so fitly fulfilled by medical men that obedience to the ancient ordinance becomes not a duty but a privilege.

Volvulus.

VOLVULUS is one of the rarer conditions giving rise to intestinal obstruction, and in this number of THE LANCET we publish three papers on this subject. In one of these the whole mass of the small bowel was twisted and in the two others the volvulus was associated with hernia. The volvulus in its most common form, if we may use the word common in connexion with so uncommon a disease, usually affects the sigmoid flexure, for here only do we ordinarily find the conditions which favour its occurrence. These conditions are a lengthy mesentery and what may be called a pedunculated mass of bowel. There is little doubt that volvulus of the sigmoid flexure is favoured by chronic constipation leading to distension of this portion of intestine, and at the time of its occurrence there is generally a fæcal mass in the sigmoid flexure which assists in causing the volvulus and in maintaining it when it has occurred. In none, however, of the cases recorded in this number was the sigmoid flexure involved, but in every instance the small intestine was the part affected.

The case recorded by Mr. WILLIAM BILLINGTON of Birmingham gives a description of a remarkable condition, for in it the whole of the small intestine together with the cæcum and the ascending colon had undergone rotation, so that the distended cæcum formed a palpable swelling on the left side. Such an extreme degree of volvulus can only be possible where the mesentery is abnormally long, and doubtless the abnormal length is a congenital defect, for in the majority of cases the patient is under 25 years of age. Mr. BILLINGTON'S patient was older, for he was 41 years of age, and the symptoms were complicated by the existence of renal calculi and moveable kidneys. A belt employed to fix the kidneys may have assisted in causing the rotation of the intestines, for three weeks later the patient had all the signs of a sudden intestinal obstruction. An operation was performed six days later, when the mesentery was found twisted and the cæcum was discovered enormously distended lying on the left side of the body. Sixty ounces of pus and liquid fæces escaped through an opening made into the cæcum, and then it was possible to replace the bowel in its normal position, and the cæcum was sutured to the abdominal wall so as to prevent a recurrence. Recovery followed, and except for the renal condition which may need an operation later he remains well. The main points worthy of attention in the case are the great mobility of the small intestine, cæcum, and ascending colon, the distension of the cæcum and the successful result of the operation, even though it did not take place until the sixth day. The great distension of the cæcum was caused by the twisted mesentery pressing on the ascending colon, while the duodenum was also twisted; there was thus an obstruction both at the beginning and end of the small bowel.

The two other papers dealing with a volvulus occurring in connexion with hernia are no less interesting, though the condition is not so rare as the form of volvulus described by Mr. BILLINGTON. Mr. J. F. DOBSON of Leeds has recorded two cases and Mr. R. LAWFORD KNAGGS of Leeds has recorded four. In all such cases there is great risk that the condition may be mistaken for an ordinary strangulated hernia; it is therefore of much practical importance that the position may be diagnosed. Mr. KNAGGS contributed a valuable paper on the subject to the *Annals of Surgery* some nine years ago which threw light on some of the chief points. There are several varieties of hernial volvulus and in the two more important of these the whole or part of the twisted bowel lies within the hernial sac, the twist being situated within the sac, at the neck of the sac, or in the general abdominal cavity. The cases recorded here illustrate many of the main points of the condition. It is highly necessary that the surgeon should recognise the existence of the volvulus at the time of the operation on the hernia. The indications pointing to this condition are the intense congestion of the mesentery of the herniated bowel, sometimes with numerous ecchymoses, and the absence of constriction at the neck of the sac. If, then, gentle traction be made on the bowel, it is found that the portion withdrawn from the abdomen is as deeply congested as that previously herniated, and it is then obvious that the cause of the congestion lies higher than the neck of the sac and a volvulus may be suspected. When the twist is inside the hernia or at the neck of the sac it is more readily recognisable. If reduction of

the hernia be effected without the untwisting of the volvulus, obviously the symptoms of obstruction will continue. It is not improbable that some of the cases which have been thought to be reduction in mass have been really cases of hernia with volvulus, in which the hernia has been reduced but the volvulus has not been untwisted. In one of Mr. KNAGGS'S cases the hernial sac contained no bowel but only bloody fluid and a mass of great omentum which was intensely congested and infiltrated with clotted blood. There was no constriction at the neck of the sac and the finger easily passed into the abdomen. A twist of the great omentum had occurred close to its attachment to the transverse colon. When the lower portion of the omentum was thrust down into the hernial sac the twist was rendered acute. In one of Mr. DOBSON'S cases the condition of the bowel was so serious that it was found necessary to resect several feet of the intestine as it was becoming gangrenous. In his other case the hernial sac was found to contain not only congested coils of intestine but also some bowel which was quite normal in appearance; as there was no constriction at the neck of the sac the diagnosis of volvulus with the twist within the abdomen was clear. It is not improbable that the association of a volvulus with a hernia is more common than is thought, and that many cases are unrecognised because the possibility of the existence of such a condition is not borne in mind.

Annotations.

"Ne quid nimis."

MR. THOMAS WAKLEY.

WE deeply regret to announce that Mr. Thomas Wakley is seriously ill, and that his condition is giving grave anxiety to his friends.

THE ROYAL NAVY MEDICAL SERVICE.

A COMMITTEE of inquiry into the conditions of service in the Naval Medical Department has been appointed under the presidency of Admiral Sir John Durnford, who has in the past proved himself so good a friend to naval surgeons that we may reasonably hope for the realisation of a few of those reforms for which we have pleaded from time to time. There is one reform that is urgent, and if it is not effected the findings of the committee can bring nothing but disappointment to the service which it is designed to improve. The Naval Medical Service should be given complete administrative and disciplinary control over its own hospitals. The system which subordinated medical officers to captains-superintendent in the past caused endless friction between the executive and medical officers of the Royal Navy, and although it has practically ceased to exist, its tradition has hampered the efficiency of the Medical Department to a serious degree. As a contrast to this system we would point to the American fleet which is just completing its voyage around the world and in which the captain of the hospital ship is its senior medical officer. But it is not necessary to look abroad for a model, as the policy adopted by our army towards its medical service is totally opposed to that of which we complain. The War Office allows the officers of its medical service complete control over their subordinates. The Admiralty decrees that the smallest offence against discipline on the part of the sick-berth staff must be dealt with by a process which involves the dislocation of the work of the hospital by the attendance of the senior medical officer and witnesses of the offence at the naval barracks, perhaps miles away. It is an open secret that the present system results in naval officers passing over faults of discipline as the lesser of two evils. If the Engineer Rear-Admiral, glorified playfully as "Steam Admiral," has supreme control in the Service factory, as is only proper, the senior medical officer should have like authority in the Service hospital. Other grievances on which we have dwelt are the inadequate cabin accommodation and the insufficient provision of boats. The first of these has been made the subject of an Admiralty circular and is, we hope, on the way to solution, and the latter should be dealt with in the same manner. The committee may well concern itself with the encouragement of professional keenness in naval surgeons on some such lines as have been adopted by the War Office and the India Office. The Admiralty controls the worst paid medical service of the three, and the institution of specialist pay would benefit the efficiency as well as the pockets of its medical officers. Indeed, if it continues its policy of economising on its medical department before long it will find that the greater attractiveness of the Army and Indian services will imperil seriously the supply of candidates for commissions as naval surgeons, especially as naval surgeons are more liable than the others to the pinch of half-pay. So far, indeed, from furthering the scientific attainments of its medical officers, there is a general feeling in the service that the Admiralty actually discourages ambition in that direction. If this be the case it shows a contemptuous disregard for the distinguished researches of some of its officers to whom British medicine owes a lasting debt, and forgetfulness of the history of the Indian Medical Service, where a similar spirit once reigned and did infinite damage. The Navy should encourage the scientific aspirations of its medical officers as it perfectly well can. It should encourage the publication of scientific papers by its surgeons both in the medical press and in its own annual blue-book intended for the purpose. That book has dwindled rapidly of late and we look to the present Director-General of the Department to invest it with its full utility and to remove all suspicion that scientific publicity means black marks on a naval surgeon's record. And if he can also devise a system by which individual surgeons shall receive advice as to proper lines for their work, he will have done not a little to restore the Medical Department of the Navy to its proper popularity amongst the public services.

JOHN HUNTER AND HIS CONTEMPORARIES.

PROPHETS are occasionally more dishonoured by the neglect of their friends and immediate associates than of their countrymen at large. The President of the Royal College of Surgeons of England, therefore, was attempting a difficult task when in his brilliant Hunterian oration he sought to "place" his subject in what we may call the eighteenth-century picture, for the voluminous memoirists and letter-writers of that self-conscious and gossip-loving age would seem almost to have conspired to pass by their neighbour, John Hunter, in silence. As the *British Medical Journal* pointed out in a leading article on Feb. 20th, it is remarkable that Samuel Johnson never apparently mentioned John Hunter, though he referred to William and, indeed, corresponded with him. Among his many letters Horace Walpole more than once makes mention of William Hunter, telling an anecdote of him on one occasion and dubbing him "the night-man." But of John he says never a word, though to him as a collector and *virtuoso* the Hunterian Museum must have been at least interesting. In her voluminous correspondence Mrs. Elizabeth Carter remains silent as to John Hunter. So

does that other redoubtable Elizabeth, the blue-stocking and leader of society, Mrs. Montagu. Madame D'Arblay, again, puts nothing on record concerning the illustrious man of science. Yet these ladies went everywhere and knew everybody, and their letters, taken collectively, are a bulky contribution to literature. They must, moreover, have heard much of the Hunterian Museum and of Mr. Hunter, the fashionable surgeon customarily called in to attend to duellists, and referred to in that connexion as "Surgeon Hunter." "Peter Pindar," the satirist, did, it is true, mention John Hunter, but his strain is not commendable:—

"*Sir Joseph (Banks):*
Hunter with fish intrigues our House regales—
Peter:
The tender history of cooing whales!
Sir Joseph:
Great in the noble art of gelding sows!—
Peter:
And giving to the boar a barren spouse!
Who proves, what many unbelievers shocks,
That age converts hen partridges to cocks!
And why not, since it is denied by no man
That age hath made John Hunter an *Old Woman?*"

Then follow some 14 lines on Hunter's "wond'rous cock-hen bird." The passage refers to Hunter's articles in the "Philosophical Transactions" and to his receipt of the Royal Society's gold medal. Peter Pindar (the Rev. John Wolcot) was evidently of opinion that scientific investigation is an affair of mere farce. The prejudice has only died down in our own days, but it survived in "Pickwick" which opens with a satire on the newly founded British Association for the Advancement of Science.

THE SUPPRESSION OF SLEEPING SICKNESS.

AN eminent authority on tropical medicine while addressing a scientific society the other day ventured the opinion that the suppression of sleeping sickness was only a question of efficient administration and organisation, and that there was little doubt that in time the tsetse fly would be conquered, with the result that the disease would cease to devastate wide districts in Africa. There is probably a good deal of truth in this pronouncement, but much remains to be done before these results can be realised. The recently issued Third Bulletin of the Sleeping Sickness Bureau, from the pen of Dr. A. W. G. Bagshawe, the director, draws attention to the magnitude of the task and points out that it is most irrational to suppose that under present conditions we can suppress sleeping sickness; and that attempts at the total destruction of the tsetse fly, or even for a reduction of its numbers, may be regarded as "a labour of Sisyphus." The Bulletin sets out the difficulties of the problem, and the reader is reminded that the disease is spread by a biting insect which is distributed in patches over many thousands of square miles in Africa, the inhabitants of which vast areas are too apathetic to lift a finger to save themselves from annihilation. Moreover, the disease is difficult of detection in its earlier stages, during which period infected persons may travel long distances affording opportunities for the diffusion of the malady. One of the first essentials in grappling with the difficulty is to instruct the African native as to the true nature of the disease and its mode of spreading. In this part of the work efficient assistance might be rendered by missionaries and traders as well as by officials. In the Bulletin a large amount of fresh information has been collected regarding the habits of the tsetse fly, its mode of propagation, its food, powers of flight, and the conditions which influence its distribution and numbers. The *Glossina palpalis*, it seems, relies chiefly on human blood for its sustenance, though upon occasion when that is not available it is content to feed on the blood of other vertebrates, including the crocodile, as Koch has pointed out. It has a preference for biting the black rather than the white man, and it shows a similar preference for settling on dark garments rather than on white. The flies follow in the wake of native caravans, resting when necessary on the persons of the native carriers or on their burdens; they accompany man on board boats or vessels on rivers and lakes and in this way are transported long distances. They have been known to enter railway carriages and to travel by this means hundreds of miles from their original haunts hidden underneath the seat and obtaining their meals by biting the bare legs of native passengers. For this reason it is feared that the construction of new lines of railway which pass through infected districts may give rise to serious danger by assisting to diffuse the disease. The natural enemies of the *Glossina palpalis* are not yet known, but it is believed that some fungi attack it and that insectivorous animals, including bats, birds, ant-eaters, and reptiles, feed upon it. It has been discovered that the fly has a marked repugnance to certain plants—e.g., citronella. This grass repays for its cultivation by the essential oil which it contains and areas planted with it are avoided by the tsetse flies. Since sleeping sickness depends for its spread on three factors—the fly, the trypanosome, and the human being—preventive measures should include attacks upon the fly in its haunts; removal of healthy persons from its vicinity or their protection from its bites; the prevention of access of the trypanosome carriers—i.e., infected human beings—to fly areas; and, lastly, the treatment of such persons by chemical remedies which free the peripheral blood and perhaps permanently rid them of parasites. Meanwhile Dr. Bagshawe urges that more work and more workers are needed to increase our knowledge of the natural history of the fly and the trypanosome, for on this knowledge must depend our efforts for improving the efficiency of the prophylaxis.

URO-SACCHAROMETRY IN PRACTICE.

CLASSIC as is the method of Fehling for the estimation of sugar in urine it has been only step by step that certain modifications have been introduced which have rendered the analysis of value to the busy practitioner. More or less scientific contributions on the subject have been made from time to time, pointing out the various fallacies of the method and the precautions which need to be observed if accuracy in the results is required. Contention as to the reliability of the method has turned chiefly on the question of interfering substances other than sugar which have been shown to have a reducing action on the alkaline copper solution, and on the difficulty of determining when sugar alone is present—i.e., the exact point at which the copper salt is completely reduced In a paper which we publish this week it is pointed out that the appearance of the well-known blood-red precipitate corresponds with the complete reduction of the whole of the copper oxide to the suboxide and the discharge of all the colour from the solution. As Dr. T. J. Walker in the paper referred to writes, "Every medical man must have observed (especially in urines containing a large amount of sugar) that the copper suboxide is occasionally thrown down as a pure red (scarlet or crimson) deposit instead of the usual yellow, drab, or orange precipitate which as a rule occurs in the ordinary method of qualitative testing." And so it occurred to him that if he could determine the conditions which led to the formation of a pure blood-red precipitate he might be able to utilise its occurrence as an index of the amount of sugar present. This he does satisfactorily, as subsequent experiments proved, by adding the urine drop by drop to boiling Fehling's solution, boiling for a few seconds as each drop was added, in which case, with the exception of urines containing a very low percentage of sugar, the definite result was obtained constantly and not

occasionally. In short, the point when the precipitate obtained is of a decided blood-red colour indicates that the copper solution has been exactly reduced and that no blue supernatant liquid remains. This point can be reached with fair precision by following the directions which Dr. Walker gives, and by taking exact measurements of both the amount of Fehling's solution employed and the quantity of urine added in the way described, a close approximation of the sugar present in the urine is quickly arrived at. This interesting observation as to the significance of the appearance of a precipitate entirely of a blood-red colour, which is an indication that the copper has received exactly the amount of sugar sufficient to reduce it, places in the hands of the busy practitioner a speedy and trustworthy method of estimating the sugar in urine on the chemically sound principle discovered by Fehling.

WEEK-DAY AND SUNDAY SNOW: AN INSTRUCTIVE COMPARISON.

THE purifying effect of snow upon the air is easily demonstrated by making an analysis of the water obtained on melting the snow. The results are further of considerable interest inasmuch as they indicate to some extent how far the air has receded from a given standard of purity. It is obvious that snow falling through pure air will yield on melting a practically pure water. The fact that on Sunday last a very heavy fall of snow took place in London gave us an opportunity of determining whether the condition of the metropolitan air on that day is better than on a week-day. It is reasonable to suppose that it might be, for on Sunday there are fewer fires burning and the conditions generally on that day are such as are calculated to diminish the force and number of polluting agents. We had occasion to give in THE LANCET of Jan. 2nd, p. 49, an analysis of the snow (taken from the roof of THE LANCET Offices) which fell copiously in London on Tuesday after Christmas Day last year, when the analytical results showed the removal of a large quantity of atmospheric impurities. These impurities represented the vitiating effects of a working day, and the analysis of a gallon of the melted snow or 10 pounds weight of it was calculated to be as follows:—

	Grains.
Suspended matter (chiefly soot, coal particles, and tarry products)	30·32
Mineral matter in solution	4·20
Organic ,, ,, ...	7·84
Free ammonia	0·07
Organic ammonia	0·01
Common salt	1·33
Sulphuric acid	3·36

The recent Sunday snow, taken from exactly the same place as the week-day specimen, gives on analysis the following results:—

	Grains.
Suspended matters (coal, soot, and tar) ...	6·65
Mineral matter in solution	1·93
Organic ,, ,, ...	1·57
Free ammonia	0·05
Organic ammonia	0·02
Common salt	1·27
Sulphuric acid	Trace

The Sunday snow thus shows roughly a fifth of the amount of impurities present in the week-day snow, but perhaps the most significant difference of all is that while the week-day snow contained as much as 3·36 grains of sulphuric acid per 10 pounds the Sunday snow contained practically none. These comparative results demonstrate pretty sharply that it is chiefly to the combustion (complete as well as incomplete) of coal that London owes its sullied air. In spite, however, of the Sunday snow showing a comparative state of purity, on calculation it will be found that the snowstorm of last Sunday afternoon and night carried to the surface of the county of London alone some 75 tons of dissolved solids, 142 tons of suspended matters, 100 tons of coal, 25 tons of salt, and 1 ton of ammonia. We think it would give the ordinary meteorological observations a considerably increased interest if analyses of the rain, hail, and snow were regularly included. The variations would be most instructive, judging from the instances which form the subject of this note.

EXAMINATION OF PEAT.

MICROSCOPISTS as well as phytologists will be grateful to a lady Bachelor of Science, Mrs. Eleanor M. Reid, for the discovery of the means of investigating seeds of an ancient flora and other objects preserved in peat. The plan adopted with success was described in a paper read before the meeting of the Linnæan Society on Feb. 6th and appears in the journal of that society published on Feb. 19th. It is extremely simple and answers well in the compact and otherwise intractable forms of peat. It consists in boiling the specimen in a solution containing a third of its bulk of concentrated or dehydrated soda, which is stronger than ordinary washing soda, for several hours. It then becomes thoroughly loosened and may be washed on a fine meshed perforated zinc sieve until the water passes through clear. From a specimen of peat obtained from a base of a high peat moor near Lancaster which weighed only two ounces, Mrs. Reid picked out nearly 300 specimens of moss, seeds, and insects in a fit state to be determined. The species of flowering plants represented were Lychnis flos cuculi, L.; Menyanthes trifoliata, L.; Betula alba, L.; Cladium Mariscus, Rob. Br.; Scirpus pauciflorus, Lightf.; Scirpus fluitans, L.; Carex, two species; many specimens of moss; several elytra of beetles and wings of flies; a few fragments of charcoal or carbonised wood. In another case after 33 hours' boiling leaves and fronds of fern could be recognised apparently uninjured. Many interesting deductions can be made from the examination of the specimens thus treated in regard to the flora and fauna contemporaneous with the deposit of the peat. The method of examination proved equally useful in the investigation of pipeclay deposits.

INFANTILE MORTALITY.

THE Prime Minister on Feb. 26th, replying to a deputation from the executive committee of the National Conference on Infantile Mortality, assured his hearers of the interest taken by the Government in the subject, and following Mr. Asquith, Mr. Runciman and Mr. Burns replied on behalf of the Education Department and the Local Government Board respectively, holding out hope of early legislation in various directions with a view to diminishing the rate of infantile mortality. The Notification of Births Act is rapidly progressing in its work, while the appointment of female health visitors is already making itself felt in a very appreciable way in those towns where such appointments have been made. In the town of Hove, for example, this officer's influence has been brought to bear upon the home life among the poorer classes, while her investigations have shown that in very many cases, owing to poverty and insufficient nourishment, the mother's milk either has been quickly exhausted or has been found to disagree with the offspring. This state of affairs is to be remedied at Hove in as many cases as possible by means of a fund which is being raised privately. This is to be used in conjunction with the work of the health visitor and the medical officer of health for the purpose of providing poor mothers with, at least, one good meal a day. At Worthing a Children's Care Society has just been formed to assist in carrying out by

voluntary effort the provisions of the Notification of Births Act, and to help necessitous cases which are found in the course of the medical inspection of school children. Public opinion requires stimulation on this very important subject of infantile mortality, and much can be done by private enterprise. There has been during the last year or two a great diminution in the death-rate of children from birth to five years of age, but the rate is still shamefully high, and it is to be hoped that the efforts which are now being made throughout the country will have good results. There is a great work before the health visitors in our large towns.

THE CONSTANT PRESENCE OF TUBERCLE BACILLI IN THE BLOOD IN TUBERCULOSIS.

IN the *American Journal of the Medical Sciences* for February Dr. R. C. Rosenberger, assistant professor of bacteriology in the Jefferson Medical College, has published a paper on an important subject which has received attention in recent years—the presence of tubercle bacilli in the blood in tuberculosis. Some observers have succeeded in obtaining cultures of the bacillus from the blood in acute miliary tuberculosis but the number of cases recorded is few. Others have asserted that the termination of cases of pulmonary tuberculosis is accompanied by infection with the pneumococcus, streptococcus pyogenes, staphylococci, and bacillus pneumoniæ. Dr. Rosenberger examined the blood in the following manner. He took five cubic centimetres of blood from a vein in the arm and immediately placed it in an equal quantity of normal saline solution containing 2 per cent. of sodium citrate. He shook the mixture well and placed it in a refrigerator for 24 hours. At the end of this time there were an abundant sediment and a slightly turbid solution. He removed some of the sediment with a pipette and placed it upon a slide which he dried with moderate heat, and then placed in distilled water until the blood was completely laked. Then only a delicate film remained. This was dried and fixed in a Bunsen flame and stained for tubercle bacilli. As a rule, bacilli with the morphological and tinctorial characters of the tubercle bacillus could be found in the first slide so prepared, though in several cases three slides had to be searched before they were found. A negative result should not be concluded until at least 30 minutes are spent in the search. By cleaning with pure nitric acid and solution of caustic soda every precaution was taken against contamination of the pipettes. The syringe was boiled and placed in caustic potash. Intimate mixture of the blood with the saline solution is essential lest any clotting occurs, for then the greatest difficulty is experienced in demonstrating the bacilli. Dr. Rosenberger has examined the blood in 50 cases of tuberculosis. These included five cases diagnosed as acute miliary tuberculosis, two as fibroid tuberculosis, one as pneumothorax, 15 as incipient tuberculosis, 23 as advanced tuberculosis, and three as laryngeal tuberculosis. He also examined the blood from the umbilical cord of children of tuberculous mothers and always found the bacilli. Sometimes only a few were seen, but usually there were large numbers, clumps of 30 or 40 bacilli being not unusual, especially in acute miliary tuberculosis. Most of the organisms were of normal size but some were short and even clubbed; a few very long forms were also encountered. In several cases clumps of the bacilli were observed in the leucocytes, indicating phagocytosis. In a patient in whom tubercle bacilli were found on two different occasions examination revealed no signs of the disease. Two cubic centimetres of the citrated sediment were inoculated into a guinea-pig. The animal died in three weeks from peritoneal hæmorrhage. The lungs were found studded with tubercles and there were four in the liver, and the spleen and mesenteric glands were enormously enlarged from the disease. Dr. Rosenberger concludes that in all forms of tuberculosis there is bacteriæmia. Even in cases undergoing recovery the bacilli are demonstrable in the blood, though in small numbers. In a postscript to his article he states that up to Jan. 15th, 1909, he has examined 125 cases of tuberculosis and found the bacillus in the blood in all. The importance of these observations is obviously great, but though they appear to have been made carefully the sweeping conclusion that the tubercle bacillus is always present in the blood in tuberculosis will probably not be accepted without confirmation. We may point out, however, that in other diseases, for example, enteric fever and pneumonia, the infecting organism has been found in recent years in the blood in unexpected frequency. The presence of tubercle bacilli in the blood in tuberculosis does not seem to have received attention in this country but in France it is well recognised under the term "tuberculous bacillæmia" which has been employed by Professor Debove. Another conclusion drawn by Dr. Rosenberger is that mixed infections late in tuberculosis are not so common as is supposed. By his method of demonstrating the tubercle bacillus he only once found another organism—the pneumococcus.

MEDICAL MEN AND PATIENTS' WILLS.

IT is impossible for a medical man to be in a more delicate position than when he finds himself benefited by the will of a patient. A good example of this situation was exhibited at the Law courts last week before Mr. Justice Bigham, when the testamentary intentions and performances of an unfortunate lady were inquired into with regard to one of her solicitors and one of her medical advisers, Dr. William Dunn. The story can be told in a few words. The testatrix was living apart from her husband. While living apart from her husband she was treated kindly by Dr. Dunn, in whose benefit she made more than one will. Undue influence was alleged against both medical man and solicitor, but a will benefiting the former was pronounced for by the court, certain terms of arrangement being arrived at with the deceased's husband. The only reason why we refer to the matter is that as the settlement came after the case had been opened in public, and as the proceedings were so reported in the daily papers as not to bring out many of the essential circumstances, Dr. Dunn's behaviour may be wrongly interpreted. The facts which Dr. Dunn's professional brethren and his patients ought to know are these. The testatrix came to him as a patient in great poverty, when he attended her gratuitously and lent her money and generally treated her with particular kindness. After this time, owing to the death of her sister, she succeeded to certain money which she proceeded to deal with in wills which showed her intention of remunerating Dr. Dunn, who had been kind to her in adversity. The will which was pronounced for was made in September, 1906, and the testatrix died on June 26th, 1907, during the last part of her life not being under Dr. Dunn's care or treatment. Between the time of making the will which was pronounced for and her death she made a will which she did not sign, under which Dr. Dunn was still benefited, and no question of undue influence could here be raised. We consider that Dr. Dunn was perfectly right to allow the case to be settled on the understanding that some division of the money should be made between himself and the relatives of the testatrix, for in the matter of patients' money medical men and lawyers cannot be too scrupulous; but there can be in the circumstances no conceivable objection to Dr. Dunn still benefiting under the testatrix's will. He befriended her in

adversity, she succeeded to the money after much unselfish kindness had been extended to her, she desired to reward the man who had helped her in her need, and to the end of her sad life she retained that desire, though she had passed from his professional care.

PRIMARY TUMOURS OF THE HEART.

PRIMARY tumours of the heart are of some little interest not only from their rarity but also because it is often difficult to establish their nature, many of the recorded cases being regarded by some pathologists as organised thrombi rather than as true neoplasms. Dr. Oswald Hagedorn of Hanover records two cases which he has investigated in the *Centralblatt für Allgemeine Pathologie und Pathologische Anatomie*, Band XIX., No. 20. He also gives a brief analysis of the cases recorded by other observers, including six cases of myoma, one angioma, one cavernous tumour, 29 myxomata, six lipomata, two sarcomata, and one case of indefinite nature. Of his own cases, the first was in a middle-aged man. On the posterior cusp of the aortic valve there was situated a nodule of about the size of a cherry-stone. It was translucent, reddish in colour, and its surface was beset with coiled reddish-white villous projections, about one-quarter to half a millimetre in thickness. There were a number of other masses of new growth in various organs which proved to be secondary deposits from a carcinomatous hypernephroma of the right kidney. Microscopical examination of the tumour of the aortic valve showed that it was poor in cells and rich in fibres, and that it was covered with an endothelium similar to that of the valve cusps themselves. Dr. Hagedorn describes it as a papillary fibroma. The second example was found in a man aged 28 years. The left auricle was found distinctly to be dilated and to contain a bilobed structure which was attached to the posterior wall where it becomes continuous with the auricular septum, just behind the foramen ovale. Each of the two halves was larger than a walnut and was dark red in some places and yellowish red in others. The mitral valve was thickened. The tumour was beset with coarse knobs and villous projections which were smooth on the surface, and some of which were transparent. Microscopically the structure was not like that of a thrombus undergoing organisation, and Dr. Hagedorn is of opinion that it was an œdematous fibroma or angio-fibroma, although he suggests as a possibility that it may have been myxomatous. Dr. Hagedorn's paper forms an interesting addition to the literature of pathological curiosities, and the bibliography which he appends should be of value to those interested in rare tumours.

EARTH TIDES.

THE extremely complicated problem of earth tides has recently been brought into public prominence by an announcement of Professor Camille Flammarian as to the researches of Professor Hecker of Potsdam. These experiments, which were carried out with that labour and patience which characterise German scientific work, were described in an illuminating article by Captain Craster, R.E., in the *New Quarterly* for March, 1908. By these experiments Professor Hecker was enabled to get a "direct measurement of the earth tide which had eluded observation for so long." The principle of the calculation is that it is possible to estimate how much a pendulum would be deflected by the attraction of the sun and moon if the earth were perfectly rigid. Professor Hecker's observations were devoted to recording how much a pendulum actually is deflected. The difference between these two records is the measurement of the earth tide. It may be of interest to our readers to recall to mind a little known and privately printed work (1888) by the late Dr. Charles Bland Radcliffe, entitled "Behind the Tides." Dr. Radcliffe, who was physician to the National Hospital for the Paralysed and Epileptic, was a man of whom the present Dean of Salisbury said in a memorial sermon: "Some would describe his scientific theories as eccentric, while others would declare them original;" and "his mind ascended as by nature into the high regions of philosophic mysticism." His attention was first drawn to the subject by observing that the rise and fall of a sensitive aneroid barometer in a boat floating on the sea only showed about half the rise and fall put down in the official tide table. He therefore studied the barometer readings, both ashore and afloat, at three different stations for an average period of five weeks, and came to the conclusion that the floating barometer at low water showed a *downward* movement of about 11 feet, while the land barometer reading at low water showed an *upward* movement of about 9 feet—i.e., that the land rose out of the water as well as the water simply receding from the land. The two figures added together made the 18 feet or so which was the tidal rise and fall as set down in the official tide tables. As to the cause of this earth tide, Dr. Radcliffe evolved a theory that by the electrical action set up by the sun and moon there was an increase or decrease in the subterranean heat which causes the earth to bulge and to contract. It may be as well to add that the observations of Professor Hecker go to show that there is a movement of the earth's surface to the extent of some 20 centimetres only. Assuming that the methods of determining the earth tides are beyond criticism apart altogether from the question whether they have been proved to exist at all, it would next become of interest to find out what influence (if any) they may bring to bear upon the ordinary recorded physical conditions of the earth's surface at different places. Does the earth's alleged tidal movement, for example, render some correction necessary in regard to meteorological observations? and, if so, does it afford one more factor of possible importance in the relationship between climatology and health?

INNERVATION OF THE SKIN.

A VALUABLE accession to our knowledge of the functions of the skin should follow the observations and experiments of Mr. Wilfred Trotter and Mr. H. Morriston Davies, which have been published in the *Journal of Physiology* of Feb. 9th, 1909. Hitherto the views of physiologists have been based either upon direct experiments made upon the healthy integument or upon the loss or defect of functions consequent on pathological trouble. The objections that it was conceivable the antivivisection faddists might raise against the division of sensory nerves in a vertebrate animal were neatly turned by these observers voluntarily submitting to the division of certain nerves, whilst the accuracy and consequently the value of the results obtained were greatly increased by the fact that the subjects of the experiments were trained observers who were willing to give much time and attention to the work. After various trials seven cutaneous nerves were selected, the middle cutaneous of the thigh being found to be the most convenient. Local analgesia was established with eucaine and adrenalin and proved very effective. Preliminary tests were made on both observers on the sensitiveness of their skin in regard to delicacy of touch to contact of a very fine camel hair pencil and to the capability of discriminating the points of a pair of compasses and also on the appreciation of temperature and pain. The conclusions at which they arrived after section in one or the other of the writers of the article of one of the seven cutaneous nerves were that in each case the area of skin supplied by the nerve showed defects in consequence of the operation in seven distinct functions, of which four were sensory—namely, sensibility to touch, cold, heat, and

pain; and three motor—namely, vaso-motor, pilo-motor, and sudo-motor. In each case the sensory changes showed a central area of profound loss; an area of moderate extent surrounding this of partial loss; and a large area in which a qualitative change could be detected. The loss of motor function showed a central area of profound loss and a surrounding area of partial loss. During a certain period following the nerve section, from about the second to the sixth week, hyperalgesia may appear, probably due to some irritative change. Sensibility to touch is subserved by a nervous mechanism distinct from that of sensibility to pressure; the former occurs in the skin only, the latter chiefly in structures situated at a greater depth, though the skin probably possesses some sensibility to pressure. The touch stimulus is intimately associated with movement. Thermal sensibility is not directly concerned with the temperature of the stimulating object, but the rapidity of thermal change. There are two pure thermal sensations, cool and warm. Cold and hot are probably compounds due to the addition of a pain factor to the pure thermal element. The skin is normally anæsthetic to temperatures not widely different from its own. After section of a nerve recovery of function occurs only as a result of regeneration. Recovery of all the functions which are dependent on regeneration begins about the same time. Sensations derived from a recovering area show a remarkable qualitative peculiarity. Cold, pain, and the pain element of heat are intensified, but touch is little changed though more difficult to elicit. These are only some of the conclusions given by the writers, but they are sufficient to excite interest in their experiments. The memoir is illustrated by numerous drawings in the text.

MECHANICAL DETECTION OF EMOTION.

SOME amusement has been caused by notices in the papers of a "machine for detecting lies" which is technically styled a galvanic psychometer. A very weak current is passed through the subject whose electrical resistance is indicated by a delicate mirror galvanometer. It is found that variations of resistance occur according as the repose of mind or body is or is not disturbed. Thus, when questions, or words implying questions, are proposed the extent of the interference with the resistance and the length of time elapsing—generally a few seconds—before the variation commences are considered to give some indication as to the degree of emotion caused, but it must be somewhat difficult to judge between the emotion of horror experienced by a person spoken to about a murder of which he is guilty and that of a totally innocent person suddenly accused. It is pretty certain that the apparatus is useless for the detection of falsehood. Notwithstanding this, many interesting results have (according to Dr. Schlub in *La Semaine Médicale* of Feb. 24th) been obtained by experiments carried out by Dr. Veraguth of Zürich. He found that when mind and body were completely at rest there was a gradual diminution of the current. A noise, a light, a touch, reading of an exciting character, mental calculation, or the recollection of some exciting incident, all produced—at the end of a few seconds, which may be called the latent period—a marked increase of the current. Dr. Veraguth made observations on patients with anæsthetic regions due to disease of the spinal cord and found that in these circumstances as well as when narcosis had been induced no reflex was produced by tactile, thermic, or faradic excitation. A cat, too, which mewed on its tail being pinched showed considerable increase of current, but when sensation had been abolished by anæsthetics no alteration in the current passing was produced by pinching the tail. In contrast to this it was found that hemianæsthesia in hysterical patients did not prevent the increase of the current. Dr. Veraguth finds that the alteration in the electrical resistance, which he calls the psycho-galvanic reflex, is not due to voluntary or involuntary movements on the part of the subject nor to any differences in the contact of the electrodes, nor to endosomatic electric currents in the muscles, nerves, or glands, but that it is entirely due to the resistance of the skin and is especially marked in the palmar and plantar regions, the special organs in the skin to which alone he has been able to trace the effect being the sweat glands. He remarks that there is considerable similarity between the structure of the skin of the heel and palm and that of the electric organ of certain fishes which has the appearance of being a mass of glands.

WE regret to announce the death on Feb. 28th, after an operation, of Dr. Peter Horrocks, consulting obstetric physician to Guy's Hospital, at 42, Brook-street, in his fifty-seventh year. We hope to publish an account of his professional career in a subsequent issue.

THE annual dinner of the Irish Medical Schools' and Graduates' Association will be held at the Hotel Cecil on March 18th at 7.30 P.M.

THE ENGLISH ROYAL COLLEGES AND THE UNIVERSITY OF LONDON.

IT will be remembered that last autumn delegates were appointed by the Royal College of Physicians of London and the Royal College of Surgeons of England to consider and draft a scheme which, if approved by the Colleges, should be submitted to the University of London with the object of establishing a system of joint examinations between the Colleges and the University. The action of the Royal Colleges had its origin in the desire of their governing bodies to meet the difficulties which now lie ahead of the London student in his endeavour to graduate in medicine at his University, and the responsibility of reporting upon the situation was delegated to Sir Richard Douglas Powell, Mr. Henry Morris, Sir William Allchin, Mr. H. T. Butlin, Dr. H. A. Caley, Sir W. Watson Cheyne, Mr. H. H. Clutton, Mr. R. J. Godlee, Mr. A. Pearce Gould, Dr. Edward Liveing, and Dr. Norman Moore.

These gentlemen made a report to their Colleges on Dec. 3rd, 1908, and this report was approved and adopted by the Royal College of Surgeons of England on Dec. 10th last and by the Royal College of Physicians of London on Dec. 17th. The following is

THE REPORT.

The delegates appointed by the Royal Colleges "to consider and draft a scheme which, if approved by the Royal Colleges, shall be submitted to the Senate of the University of London, with the object of establishing a system of conjoint examinations," beg to report as follows:—Taking into consideration the provisions of Statute 123 of the University of London, the existing conditions of medical education in the metropolis and the undoubted demand for a degree in medicine which shall be more accessible to the average London medical student, and assuming the existence of a general desire on the part of the University, the Royal Colleges, and the Medical Schools of London to unite in a concerted effort to provide such a degree, the delegates are of opinion that there should be little difficulty in arriving at an equitable and advantageous solution of the problem.

Statute 123 of the University of London is as follows: "The Senate may make arrangements with the Royal College of Physicians of London and the Royal College of Surgeons of England or either of them to conduct jointly with the Senate examinations in such portions of the subjects included in the course of study for a medical degree as may be agreed upon between the Senate and those colleges or either of them, and may also make similar arrangements with other corporations and institutions holding professional examinations in subjects included in other courses of study."

At the present time of the male students who obtain the M.B. or M.D. degree of the London University, 84 per cent. take the diplomas of the Royal Colleges, and of the graduates in medicine of the University of Cambridge 71 per cent. take the diplomas. Of the total number of diplomates of the Royal Colleges, 20 per cent. take the degree of the University of London, 16 per cent. the degree of the University of Cambridge, and 15 per cent. the degrees of other universities, English, foreign, or colonial. It is thus shown that roughly one half of the diplomates of the two Colleges are also graduates in medicine. It is further evident that there is a general desire amongst those who intend to take university degrees or who already possess them to obtain also the diplomas of the Royal Colleges.

It is desirable that in London the system of teaching and examination should be coördinated in such a manner as to reduce the number of examinations. In London the same representatives of medicine and surgery, midwifery, anatomy, physiology, and other subjects, teach for the examinations of the University and of the Royal Colleges. The organisation of medical education in London, whether by the University, the Royal College of Physicians, or the Royal College of Surgeons, is largely controlled by the same individuals. Yet for the University and for the Royal Colleges there are separate boards of examiners in all branches of the curriculum, separate examinations involving considerable expense, and a re-examination of the student in the same subjects, frequently within a few months. The general character of the examinations and the methods of conducting them by the University and by the Royal Colleges are very similar.

The University makes use of the Examination Hall of the Royal Colleges for the Intermediate M.B. examination, for the *viva voce* examinations in Medicine, Midwifery, Forensic Medicine, Public Health, for the Clinical Examination in Surgery and the examination in Surgical Anatomy and Apparatus for the Final M.B., B.S., as well as for part of the M.S. degree. The rooms of the Royal College of Surgeons and preparations from the Hunterian Museum are placed at the disposal of the University for the pathological part of the Final examination. The instruments, specimens, and other apparatus of the Conjoint Board are also utilised, and the officials of the Board assist to a considerable extent in the arrangements for some of these University examinations.

In considering such a scheme the delegates have taken as a basis of their deliberations the following principles: (*a*) That the University should retain all its existing rights as to the granting of degrees, but should consent to exercise them as regards Pass Degrees conjointly with the Royal Colleges so far as those students are concerned who shall have spent not less than four years in study at London Medical Schools and Hospitals and who shall have complied with such conditions as the University and the Royal Colleges may determine. It is assumed that the University will continue to grant, independently of the Royal Colleges, Degrees in Medicine and Surgery which might be called Honours Degrees. The views of those who maintain that the present Degrees of the University of London are of an Honours' standard would thus be met. (*b*) That the Royal Colleges should retain all their existing rights, to grant diplomas to those who (1) are not eligible under the foregoing conditions; or (2) do not desire to come under such conditions. It is thus assumed that the Royal Colleges will continue to admit to examination for their diplomas candidates from other universities, home, foreign, and colonial, as well as London medical students who are not students of the London University. (*c*) That the Royal Colleges should be associated with the University in conducting the Preliminary Scientific, Intermediate, and Final Examinations for the Pass Degree (M.B., B.S., M.D.).

This arrangement will secure: (1) That the average London student will be able to obtain the degree of Doctor of Medicine; (2) that medical education in London will become more systematised; (3) that there will be a reduction in the number of examinations to be passed by the student desiring to take a degree and the diplomas; (4) that a larger proportion of students would be encouraged to avail themselves of the great opportunities of clinical study afforded by the hospitals of London; (5) that the University and the Royal Colleges acting together with the same staff and equipment would be able to reduce the expenditure on examinations.

The delegates beg to state that, should the principle of an association between the University and the Royal Colleges be accepted, they are prepared to bring forward a working scheme for carrying the proposal into effect. In view, however, of the fact that since the appointment of the delegates, the Senate of the University has asked for a Royal Commission, the delegates beg to recommend that the Royal Colleges should take steps to secure the representation of their views on the subject of the present reference before any Royal Commission which may be appointed, and should at a fitting time ask the University to appoint delegates to discuss this question with the delegates of the Royal Colleges, so that if possible they may agree upon a joint representation to the Royal Commission.

The appointment of the Royal Commission alluded to in the closing words of the report, having for its object to inquire into the whole working of the University of London, lends additional interest to this valuable report of the delegates of the Colleges, as there is now a real opportunity of securing coördination in the system of teaching and examination in the University of London. The scheme proposed in the report was communicated to the University of London in a letter addressed to the Vice-Chancellor by the Presidents of the two Colleges on Jan. 22nd, 1909, asking him to bring the subject before the Senate, and expressing the hope that the Senate would see its way to appoint representatives to meet the delegates of the two Colleges and discuss the proposals outlined in the Report.

MIDWIVES ACT COMMITTEE.—The fifth meeting of the Departmental Committee appointed by the Lord President of the Council to consider the working of the Midwives Act was held on Feb. 24th at the Privy Council Office, Mr. Almeric FitzRoy presiding. The following witnesses attended and gave evidence: Dr. Hugh Woods, on behalf of the London and Counties Medical Protection Society; Miss Amy Hughes, on behalf of Queen Victoria's Jubilee Institute for Nurses; and Sir William J. Sinclair.

THE ROYAL COMMISSION ON THE POOR-LAWS AND RELIEF OF DISTRESS.

II.[1]

THE MINORITY REPORT.

WE now proceed to give a brief summary of the Minority Report signed by the Rev. Prebendary H. Russell Wakefield, Mr. F. Chandler, Mr. G. Lansbury, and Mrs. Sidney Webb, the four Commissioners who, finding themselves unable to agree with the conclusions and recommendations of their colleagues, have set forth the facts of the case as revealed to them by the investigations, and the reforms which those facts in their opinion demand, in a separate report. It may be mentioned that the Minority Report is admirably planned and written; its arguments lead directly to its recommendations, and the nature of these recommendations is never in any doubt. For this reason, apart from others, it tends to be a more convincing document than the Majority Report, and will demand especially close scrutiny when later in this series of articles we have to consider what practical course it will be best for the country to pursue in the face of admittedly dangerous circumstances.

The Minority Report is divided into two parts—I., The Destitution of the Non-Able-Bodied; and II., The Destitution of the Able-Bodied—of which the latter part is calculated to attract the more public attention owing to the full discussion of the "unemployed problem" which it contains and the proposals which it sets forth for providing scientifically by preventive measures against the recurrent cycles of industrial slackness. The first is of more direct interest to the medical profession. In Part I. the birth, infancy, and childhood of those coming under the Poor-law, or apt to come under it at a later stage of their existence, are treated at length, as well as the curative treatment of the sick poor, the care of the mentally defective, and of the aged and infirm. In discussing the problems presented by these classes of destitute persons, the prevention of their destitution or of that of generations to come is assigned paramount importance, and it is satisfactory to note that the four Commissioners recognise no less fully than the Majority Report the part which the medical profession can be made to play in this preventive process—i.e., by aiding in the building up of the healthy race of workers which is essential to the nation's prosperity.

Part I.

Dealing, as has been said, with the destitution of the non-able-bodied, Part I. of the Minority Report is divided into 12 chapters, in the first of which indoor relief in the general workhouse is discussed, and in the second outdoor relief, the two branches of aid to the poor now administered by the guardians. In their condemnation of the general mixed workhouse the four Commissioners are even more emphatic than the majority, and their criticism of its shortcomings is very instructive. They condemn it in all forms, whether urban or rural, new or old, large or small, and describe it as abhorred by the poor and having a depressing, degrading, and injurious effect upon the character of its inmates. With regard to outdoor relief as at present administered, they condemn the policy of its refusal to the non-able-bodied so long as the alternative offered is admission to the general workhouse. They condemn its distribution in doles which effect no lasting good and obviously consider the whole scheme of its administration as a disastrous failure. This they do not attribute to any personal lapses or want of zeal on the part of the guardians, but to a system which combines in the same body "duties which can rightly be performed by a board or committee and those which can be efficiently discharged only by specialised officers continuously engaged in the task."

It will be convenient here to give the outline of the proposed substitution for the board of guardians. The dissenting Commissioners do not desire to create a fresh authority, either elective or appointed, but would hand over the various functions of the destitution authorities to existing committees of the county and borough councils, the areas of relief being changed from those of the existing Poor-law to those of our sanitary administration. Under such a scheme the distribution would be: 1. Children of school age—to the

[1] No. I. was published in THE LANCET of Feb. 27th, 1909, p. 638.

education committee. 2. The sick and permanently incapacitated, the infants under school age, and the aged needing institutional care—to the health committee. 3. The mentally defective of all grades and ages—to the asylums committee. 4. The aged to whom pensions have been awarded—to the pension committee.

The recommendations with regard to these subdivisions of the work of relief are thus summarised:—

> That the several committees concerned should be authorised and required, under the directions of their councils, to provide under suitable conditions and safeguards, to be embodied in statutes and regulative orders, for the several classes of persons committed to their charge, whatever treatment they may deem most appropriate to their condition, being either institutional treatment in the various specialised schools, hospitals, asylums, &c., under their charge; or, whenever judged preferable, domiciliary treatment, conjoined with the grant of home aliment where this is indispensably required.

They make recommendations further for the recovery of payment from persons aided or from relatives where it can be afforded. A suggestion in these first two chapters is the institution of Registrars of Public Assistance whose duty it will be to keep a register of all cases of such assistance, to recover charges if any be made for it, and to sanction grants of "home aliment," the registrar to have under him a staff of inquiry and recovery officers, and a local receiving house for the temporary accommodation of non-able-bodied persons in need and not yet definitely dealt with by the committees. It is suggested that in the performance of work allocated as above the several committees shall be under the supervision of the appropriate Government departments.

We now come to the consideration of Chapter III. which treats of the existing conditions of birth and infancy among the poor and of their possible amelioration. The Commissioners find that relief in these cases is afforded by the guardians under the Poor-law and by the public health authorities, and that "the partial duplication of the service, together with the fragmentary and entirely uncoördinated provision made by voluntary agencies, is undermining parental responsibility and causing wasteful expenditure, whilst failing to prevent excessive infantile mortality." Under the subheading "Domiciliary Treatment of Expectant Mothers and Mothers with Infants" we note a passage from which the gist of the minority's views upon this branch of their subject may be gathered. After referring to the inadequacy of the medical relief allowed they pass to "the wholly unconditional character of the treatment afforded," and proceed: "We cannot discover that when a board of guardians decide to maintain on outdoor relief a destitute expectant mother or a mother with an infant, it ever occurs to anyone to accompany the money with any sort of instructions as to prenatal conduct and health or with any sort of directions as to how the child should be reared." After criticising the extravagance of spending large sums of money without any precautions to prevent the infants dying within a few days or weeks of birth they proceed: "Nor do we find the destitution authorities in any part of the kingdom taking any heed whatsoever of the conditions under which the 50,000 infants under five years of age, whom they have always on their books as outdoor paupers, are being reared." The various institutions dealing with maternity cases, including the workhouse and voluntary agencies, are criticised, and a paragraph is devoted to the futility of the provision of the Midwives Act under which medical assistance for poor parturient women in those cases where it is necessary can be demanded, but without any machinery for its payment. The confused arrangements which have sprung up to provide for the payment of the medical man from public funds or to leave him unpaid are criticised.

In this section will be found tables giving the number of infants out of every 1000 born in the Poor-law institutions of 450 unions in 1907 who died within these institutions during certain specified periods, together with corresponding statistics for the whole of the births in England and Wales and in London respectively for 1906. The dramatic conclusion is deduced from the figures that the mortality among infants in the Poor-law institutions (where the dangers arising from inadequate medical attendance and nursing; lack of sufficient food, warmth, and care; and parental ignorance and neglect, may be presumed absent) is between two or three times as great as in the population at large. The shortcomings of the statistical data upon which the conclusion is founded are frankly admitted by the Commissioners and undoubtedly this passage in the report is one around which much future discussion will take place. The general conclusions arrived at in Chapter III. comprise the following: that in view of the great mortality among the 65,000 infants under the charge of the Poor-law statistics are required to discover where the mortality is greatest and how it can be prevented. Also, "(3) That, in accordance with the recommendation of the Royal Commission on the Care and Control of the Feeble Minded, those unmarried mothers who come on the rates for their confinements and are definitely proved to be mentally defective should be dealt with exclusively by the local authority for the mentally defective. (4) That, whatever provision is made from the public funds for maternity, whether in the way of supervision, or in domiciliary midwifery, or by means of maternity hospitals, should be exclusively in the hands of the local health authority. (5) That in accordance with the recommendations of the Viceregal Commission on Poor Law Reform in Ireland the fullest possible use should be made, under the inspection and supervision of the local health authorities, of such voluntary agencies as rescue and maternity homes, midwifery charities, and day nurseries. (6) That the system, which has already proved so successful, of combining the efforts of both salaried and voluntary health visitors with the work of the medical officer of health and his staff, should be everywhere adopted and developed so as to extend to all infants under school age. (7) That the local health authority should, in all its provisions for birth and infancy, continue to proceed on its accustomed principles of: (*a*) the provision, free of charge, of hygienic information and advice for all who will accept it; (*b*) the strict enforcement of the obligation imposed upon individuals to maintain in health those who are legally dependent on them; and (*c*) where individual default has taken place in this respect, the immediate provision of the necessaries for health, and the systematic recovery from those responsible, if they are able to pay, of repayment according to their means."

Chapter IV., in discussing the care of children under rival authorities, commences by pointing out that these are three in number, supervised by three Government departments, the destitution authority, the education authority, and the police, and informs us that it is not uncommon to find the different children of one family being treated by two or even by all these three local authorities simultaneously. Discussion follows as to children under the destitution authority generally, as to the systems of boarding out, certified schools, homes, as to the children of vagrants, and other cognate matters, in which the shortcomings due to the existing law and practice are condemned. In particular may be noted the subsection on "Medical Inspection and Treatment" in which is criticised the failure to supply medical supervision and medical aid to children boarded out. With regard to poor children of school age generally the minority holds that their medical supervision properly should fall to the care of the education authority, and should not be exercised under the destitution authority. Medical aid in respect of children should not be "granted only to those who apply to the relieving officer; almost necessarily made to depend, not on the gravity of the illness of the child but on the status of the parent; withdrawn as soon as the parents wish to be without it; and, when given, given wholly unconditionally and usually without even the necessary hygienic advice." In short, the friendly guidance of parents in the treatment of their children is recommended as preferable to temporary curative intervention in the actual crisis of sickness and poverty. The conclusions of the four Commissioners in this chapter contain strong condemnation of existing conditions of the treatment of children, and the recommendation "that the only practicable way of securing unity of administration and also the most desirable reform is, in England and Wales, to intrust the whole of the public provision for children of school age (not being sick or mentally defective) to the local education authorities, under the supervision of the Board of Education; these local education authorities having already, in their directors of education and their extensive staffs of teachers, their residential and their day feeding schools, their arrangements for medical inspection and treatment, their school attendance officers and children's care committees, the machinery for searching out every child destitute of the necessaries of life, for enforcing parental responsibility, and for obviating, by timely pressure and assistance, the actual crisis of destitution."

Chapter V., dealing with "The Curative Treatment of the Sick by Rival Authorities," commences with the statement:

"We find, throughout the United Kingdom at the present time, two separate and distinct public authorities dealing with the sick poor—the destitution authority, providing medical attendance, nursing, and medicine, and often institutional treatment, for destitute sick persons whatever their diseases; and the local health authority, providing in the same area, medical attendance, nursing, and medicine, together with institutional treatment where required, for persons, whatever their affluence, suffering from certain specific diseases. Alongside of these two ubiquitous rate-supported medical services we find a whole array of medical charities of one sort or another, dealing with essentially the same classes of persons and many of the same diseases." The general recommendation in order to prevent this multiplication and overlapping is the intrusting of all medical relief to the public health authority, attention being called to the grudging, uncertain, and sometimes belated aid accorded under the Poor-law. On this subject the four Commissioners find: (10) "That we therefore agree with the responsible heads of all the four medical departments concerned—the chief medical officer of the Local Government Board for England and Wales, the medical member of the Local Government Board for Scotland, the medical commissioner of the Local Government Board for Ireland, and the medical officer of the Board of Education—in ascribing the defects of the existing arrangements fundamentally to the lack of a unified medical service based on public health principles. (11) That in such a unified medical service, organised in districts of suitable extent, the existing medical officers of health, hospital superintendents, school doctors, district medical officers, workhouse and dispensary doctors, and medical superintendents of Poor-law infirmaries—the clinicians as well as the sanitarians—would all find appropriate spheres; that one among them being placed in administrative control who has developed most administrative capacity."

Disagreement is expressed here with the view that the establishment of a unified medical service on public health lines necessarily involves the gratuitous provision of medical treatment to all applicants. Many points of detail with regard to medical practice under the Poor-law and among the working-classes are discussed at length in this chapter, but hardly come appropriately into a general summary of its conclusions, enormously interesting as they are to medical men. It will suffice to say that the four Commissioners adopt an attitude of intelligent sympathy towards the medical officer employed under the Poor-law, recognising his personal services, which they have had opportunity to observe, and ascribing the defects of organisation to the system under which he works. It is to be noted that with regard to the medical service to be performed under whatever authority may take the place of the guardians the Commissioners state that: "We do not feel warranted in giving any support to the proposal made to us that the whole of this outdoor medical service of the Poor-law should be superseded by a publicly subsidised system of letting the poor choose their own doctors. Any such system would, in our judgment, lead to an extravagant expenditure of public funds on popular remedies and 'medical extras' without obtaining, in return for this enlarged medical relief, greater regularity of life or more hygienic habits in the patient."

In Chapter VI., dealing with the "mentally defective," the Minority Report takes into account the investigations of the Viceregal Commission on Poor-law Reform in Ireland (1902–06) and of the Royal Commission on the Care and Control of the Feeble-minded (1904–08), adopts their conclusions, and follows their recommendations, finding with regard to this class of the necessitous the same overlapping of local and central authorities as in other matters, and condemning strongly the treatment of the mentally defective in the general workhouse. It expresses concurrence with the latter Royal Commission in holding that "the mental condition of these persons and neither their poverty nor their crime is the real ground of their claim for help from the State;" agreeing also that "all grades of the mentally defective (including the feeble-minded, the epileptics, the inebriates, the imbeciles, the lunatics, and the idiots) should at all ages be wholly withdrawn from the charge of the destitution authorities and from pauperism, as well as from the local education authorities, and that the entire responsibility for their discovery, certification, and appropriate treatment, whether institutional or domiciliary, should be intrusted in England, Wales, and Ireland to the county and county borough councils acting by statutory committees for the mentally defective, in which the present asylums committees would be merged, and in Scotland to the county councils and principal town councils, from which the district boards of lunacy are (with the exception of six towns) selected." It is further recommended that the work of such committees should be under the supervision of a special State department.

The aged and infirm, dealt with in Chapter VII. and forming one-third of the whole pauper population, include a congeries of different classes, not capable, in the opinion of the Minority Commissioners, of being dealt with satisfactorily under the Poor-law. They accordingly recommend distinctive treatment for the deserving aged either in institutions or in their own homes, and such distinctive treatment also in all cases as will take account of the age and of the mental and physical characteristics of individuals. They recommend special consideration for those technically disqualified for old age pensions under the Act of 1908, and discuss the probable future of the Act, which at the time of their inquiry had not yet come into force. They anticipate the development of voluntary agencies for securing supplementary pensions and other provisions against incapacity by insurance, but do not recommend State competition with these. They are of opinion that: "(10) The responsibility of making suitable provision, domiciliary or institutional, for the prematurely incapacitated and the helpless aged, together with the necessary institutional provision for the aged to whom pensions are refused, should be intrusted to the local health authority." They hold also that there should be compulsory powers of removal and detention with regard to all aged and infirm persons who are found to be endangering their own lives or constituting a nuisance to the public.

The concluding chapters of Part I. deal with matters of administrative and financial detail, including "Charge and Recovery by Local Authorities," "Settlement and Removal," "Grants in Aid," and "Supervision and Control by National Government." With reference to the last-named subject the recommendation is made "that each of the separate services—such as education, public health, and care of the insane—administered by the local authorities imperatively requires the supervision, guidance, and control of a distinct and self-contained department or division of a department, having its own regulative orders, its own technically qualified inspectorate, and its consistent line of policy."

Part II.

The destitution of the able-bodied, which forms the subject of Part II. of the Minority Report, has evoked from the Commissioners an exhaustive treatise upon a social subject of great importance. In this connexion the Commission has had to consider the development of various systems under the Poor-law from the days of Queen Elizabeth, as well as the palliative devices, some of them due to voluntary charity, initiated more or less recently in periods of trade depression and "unemployment." The Commissioners are of opinion that reform must be of a preventive character and enter fully into the conditions of skilled and unskilled labour, of the training which precedes manhood, and of the various causes which combine to bring into being the host of those who are either fitted for casual employment of an unskilled character only or are unemployable. Such causes include the absorption of boys on leaving school into callings (as, for example, that of the van boy) which result in their being turned adrift unskilled and undisciplined when they approach manhood. The conditions of life of the "men of discontinuous employment," such as navvies, and the results which accrue from them are discussed at length. In the opinion of the four Commissioners, "the task of dealing with unemployment is altogether beyond the capacity of authorities having jurisdiction over particular areas and can be undertaken successfully only by a department of the national Government." The object of this recommendation and of those which amplify and explain it is to "prevent" rather than to "cure" the condition of able-bodied destitution; and the functions of the proposed department, preventing or minimising unemployment under the control of a Minister of Labour (a member of the Cabinet), are summarised in the following recommendation: "That the Ministry of Labour should include six distinct and separately organised divisions, each with its own assistant secretary—namely, the National

Labour Exchange, the Trade Insurance Division, the Maintenance and Training Division, the Industrial Regulation Division, the Emigration and Immigration Division, and the Statistical Division." A further recommendation of interest is for the allocation by the Government of at least £4,000,000 a year to provide against cycles of depression, and the Government, it is suggested, should "arrange a portion of the ordinary work required by each department on a ten years' programme, £40,000,000 worth of work for the decade being then put in hand, not by equal annual instalments, but exclusively in the lean years of the trade cycle, being paid for out of loans for short terms raised as they are required, and being executed with the best available labour at standard rates, engaged in the ordinary way." It will be seen that this last is not a proposal that the Government should employ periodically the temporarily out-of-work, who may be unskilled or unsuitable, but that the Government should be prepared to put forward in anticipation a demand for labour when the supply is about to become over abundant, and by absorbing possibly the best available to leave vacancies for others who in periods of depression would be the first to suffer.

SEVENTIETH ANNUAL REPORT OF THE REGISTRAR-GENERAL.

II.[1]

AN important section of the Registrar-General's report is that which treats of the causes as well as of the local incidence of mortality, and which is on that account exceptionally interesting to our profession. This section is from the pen of Dr. Tatham, who, in the present as in previous years, has been careful to arrange the information at his disposal in a manner convenient for reference and comparison.

The general distribution of English mortality in the year under notice has been already dealt with; we shall therefore limit our present remarks to those matters which seem especially important in relation to preventive medicine.

Much of the saving of life represented by the exceptionally low death-rate of 1907 was due to the diminished fatality of diarrhœal diseases, which in that year were responsible for only half the usual number of deaths. The mortality from tuberculous disease was likewise below the normal. As far as it goes, it is an encouraging fact that in 1907, for the first time in the last 15 years, the mortality from cancer showed a slight decline on that of the preceding year. On the other hand, influenza showed increased mortality and was accompanied by exceptional loss of life from pneumonia and bronchitis as well as from diseases of the circulatory system. Among common infectious diseases measles caused increased mortality, but diphtheria was less destructive than usual, whilst enteric fever and scarlet fever were less fatal than in recent previous years.

Latterly the type of scarlet fever appears to have undergone considerable change. In the present report, as in several of its predecessors, Dr. Tatham has considered the question whether the rapid decline of scarlet fever mortality in the last decade has been due to diminished prevalence of the disease, or whether the infection has assumed a milder form. Unfortunately, the statistical data for the country generally are not sufficient to establish either alternative; but with respect to London the returns of the Metropolitan Asylums Board respecting more than a quarter of a million completed cases of scarlet fever throw useful light on the incidence and relative fatality of that disease in the course of the last 35 years. From a table condensed from a more extended table in the last report of that Board we learn that in the quinquennium 1873–7 the proportion of deaths to admissions averaged 12 per cent., whilst in the quinquennium ended 1907 the proportion did not exceed 3 per cent. During the same interval of 35 years the mortality from scarlet fever in the entire population of the metropolis fell from 62 to 10 per 100,000 living. With respect to this disease as well as to diphtheria and enteric fever it is matter for regret that the example of the Metropolitan Asylums Board has not been generally followed by the medical officers of health even of those large centres of population that are provided with adequate isolation hospitals. A few medical officers there are who publish statistics concerning the age and sex incidence and fatality of infectious cases admitted to the local hospitals, but the figures for the most part exhibit a bare statement of the ratio of deaths to population, thereby withholding important information not otherwise obtainable concerning the severity or the mildness of local prevalences of infectious illness. From the usual tables we learn that in the year under notice the mortality from scarlet fever was equal to 92 per 1,000,000 living at all ages, or about two-thirds the rate of the previous quinquennium. That the rate varies greatly in different parts is clearly shown when the mortality at the several ages is compared. Thus it appears that whilst in rural England the mortality at ages under five years did not exceed 18 in 100,000 living it was more than three times that amount in the urban areas.

The returns of English diphtheria mortality still continue to be unsatisfactory, because of ambiguity in the use of names apparently intended to indicate this condition. Thus we find that a considerable proportion of the deaths originally certified as due to "membranous laryngitis," and a smaller but still significant proportion of those referred to "croup," are eventually found to be really diphtheritic in character. How many of these indefinite cases remain among the deaths still appearing in the tables under the headings referred to it is, of course, impossible to ascertain. Nevertheless, it is believed that the mortality attributed to diphtheria in the Registrar-General's returns of the present day represents more accurately than in former years the loss of life from diphtheria in the country generally. In the year 1907 the general death-rate from diphtheria, exclusive of "croup," was 164 per 1,000,000 and was decidedly below the average; but from information supplied by the local registrars it appears that there are in England and Wales seven towns each containing more than 20,000 inhabitants in which the rate exceeded 400 per 1,000,000 living. Speaking generally, diphtheria now destroys more lives in the town than in the country, but in the "sixties" and "seventies" of last century this was regarded as mainly a disease of rural districts.

From a table derived from the latest report of the Metropolitan Asylums Board we learn that, as in the case of scarlet fever, there has been at these hospitals a very considerable decline in the ratio of diphtheria deaths to admissions, and likewise a considerable decline in the general London mortality from that disease, the former having fallen from 32 per cent. in 1888–92 to 9 per cent. in 1903–07, and the latter having fallen from 0·37 to 0·15 per 1000 living in the county of London. In this connexion Dr. Tatham quotes an extract from the Board's report of 1907 with respect to antitoxin treatment. "At the Brook Hospital it has been the practice to tabulate the results of antitoxin treatment, with especial reference to the day of the disease on which the treatment began. Amongst 250 cases treated during the years 1897–1907 on the first day of the disease not a single death occurred, whereas there died of 1515 cases treated on the second day 4·29 per cent., of 1690 cases treated on the third day 11·24 per cent., of 1338 cases treated on the fourth day 16·89 per cent., and of 1765 cases treated on the fifth day and afterwards 18·58 per cent."

As regards the local incidence of fatal diphtheria in this country we note that although the urban rate generally exceeds the rural, nevertheless diphtheria mortality now appears to be declining faster in the town than in the country. Further analysis of the mortality from diphtheria shows that since the beginning of the present century the rates in the earlier years of life have changed very differently in the urban as compared with the rural counties of England. In both areas the death-rate at ages under five years has fallen steadily, until in 1907 it was only half of what it had been in 1901. This is equally true of urban mortality at ages from five to ten years, but as regards rural areas the mortality at the age last mentioned has shown scarcely any decline.

From an interesting table in this report, in which English diphtheria mortality is compared with that of 22 foreign States, we learn that the loss of life in this country is on the average exceeded by that of nine foreign countries, the rates in Servia, Hungary, Austria, and Prussia averaging from two to three times the English rate. But in comparing the

[1] No. I. was published in THE LANCET of Feb. 20th, 1909, p. 566.

rates of mortality from this and other diseases it must be borne in mind that methods of nomenclature and of classification vary in different countries, and that the certification of causes of death is more complete in some States than in others; and further, that differences in the age constitution of the several populations seriously affect the comparability of the figures.

With certain reservations Dr. Tatham reports favourably of the behaviour of English enteric fever mortality in recent years. In the year 1907 the death-rate from this disease was in the proportion of 67 only in each 1,000,000 living; this is by far the lowest rate on record, and is only two-thirds of the average in the quinquennium immediately preceding that year. Among males the death-rate was equal to 81 per 1,000,000 of that sex, and among females to 54 per 1,000,000. From a chart published in the latest decennial supplement it appears that within the last 40 years enteric fever mortality has fallen to less than a fifth part of its former amount—namely, from a rate of 384 per 1,000,000 in the year 1869 to a rate of 67 in the year now under review. In the present report comparison is made between the number of admissions to the hospitals of the Metropolitan Asylums Board on account of enteric fever and the ratio of general mortality from that disease in the aggregate population of London during the same time.

From tables in the report it appears that enteric fever differs from scarlet fever and from diphtheria in this important respect—that whereas in the case of the two latter diseases the decline of metropolitan mortality has kept pace with the decline of case fatality in the hospitals above mentioned, in the case of enteric fever, on the contrary, a decline of three-fourths in the general metropolitan mortality from that disease has been accompanied by only a relatively slight decline in the ratio of deaths to hospital admissions. From the table of international vital statistics we note that enteric fever mortality has been higher than that of this country in 16 out of the 22 foreign countries respecting which information is available, the death-rate being more than double the English rate in Finland, Servia, Western Australia, Spain, Italy, Hungary, and Queensland. In only five foreign States is the loss of life from this cause proportionally less than in England.

Of gradually increasing importance in each succeeding year are the national statistics of mortality from tuberculosis in its various forms, and the present report contains all the information that can profitably be derived from a study of the registered statistics of death. *Inter alia*, the usual chart has been continued graphically illustrating the steady reduction observed since 1858 in the English mortality from tuberculous disease in the aggregate, and particularly in that of tuberculous phthisis, as the dominant factor in this mortality; and the distribution by sex, age, and locality of the several types of the infection has been traced with commendable care. But we are gratified to note that Dr. Tatham does not claim for his figures more than a rough approximation to the truth respecting the actual prevalence amongst the community of tuberculous mortality, notwithstanding that the attention both of our profession and of the laity is now concentrated on its prevention in a degree never before witnessed in this country. "In a former letter," Dr. Tatham says, "I directed particular attention to the difficulties encountered in our attempts to determine for a given time and place the amount of mischief caused by tubercle because of uncertainty regarding the nature of the morbid conditions denoted by some of the names used in medical certificates presumably to indicate tuberculous disease. I would again revert to this subject on the present occasion, because the difficulty still continues. In the absence of necropsies, which are seldom made in cases of this kind, except in public hospitals, it is extremely difficult to determine, perhaps after a single inspection in an out-patient room, the exact nature of certain diseases which may nevertheless be suspected to be tuberculous. There is no reason to doubt the substantial accuracy of the returns respecting tuberculous phthisis, for this disease in its fatal form is easily recognised, but as regards the deaths from most other tuberculous affections considerable uncertainty remains. Among these is 'tabes mesenterica,' an affection which occurs for the most part among the imperfectly nourished children of the poor, many of whom do not receive medical attention until the later stages of their illness." In recent years the mortality from pulmonary tuberculosis has been the lowest on record. In proportion to the living the victims of this scourge are only half as numerous as they were half a century ago. Between the decennium 1851–60 and the quinquennium ended with 1907 there has been a fall of 70 per cent. in the mortality from pulmonary tuberculosis among persons of both sexes below the age of 25 years. From that age onward to the close of life the fall has been less marked and has been more pronounced in females than in males.

Among other matters of grave importance in this report which are worthy of special attention is an interesting section on the causes and incidence of infantile mortality. We hope to return to this subject.

CENTRAL MIDWIVES BOARD.

A MEETING of the Central Midwives Board was held at Caxton House, Westminster, on Feb. 25th, with Dr. F. H. CHAMPNEYS in the chair.

A letter was received from the clerk of the Privy Council informing the Board that the Lord President had been pleased to appoint the Hon. Mrs. Charles Egerton of Mountfield Court, Robertsbridge, Sussex, a member of the Board in the place of Miss Jane Wilson, resigned.

A letter was considered from Dr. S. G. Mostyn, medical officer of health of South Shields, reporting that the midwife, Dorothy Hudson, had been convicted and fined 10*s.* and costs for stealing. The Board directed that Dorothy Hudson should be cited to appear before the Board.

A letter was considered from the Chief Constable of Manchester reporting that the midwife, Minnie Elizabeth Stevenson, had been convicted and fined 20*s.* and costs for practising before notifying the local supervising authority. The Board decided that no action should be taken in the matter.

A letter was considered from the Town Clerk of Chester reporting Louisa Maria Teaves for practising as a midwife without having notified the local supervising authority. The Board decided that Louisa Maria Teaves should be cautioned.

A letter was considered from the Clerk of the Privy Council stating that in the Lord President's opinion the practical objects of the Midwives Act Committee would not be served by the addition to its numbers of representatives of special interests. This was in answer to the Board's request that the advisability of adding a general practitioner and a midwife to the committee should be considered. Mr. E. PARKER YOUNG, in moving a proposition regretting that the Lord President of the Privy Council had not seen his way to concede to the suggestion contained in the resolution of the Central Midwives Board, said that it ought to be recorded on the minutes that the Board remained of the same opinion. This was seconded by Dr. STANLEY B. ATKINSON and carried unanimously.

A letter was considered from Mrs. C. E. HOBHOUSE, convener of a conference of voluntary nursing associations held in London in July, 1908, requesting the Board to consider the following resolution unanimously passed by the conference:—

> That all registrars of births should add in a new column the name, status, and address of the person who delivered the child.

The Board decided that the suggestion should be approved, and that the Registrar-General should be asked to issue the necessary instructions.

A letter was considered from Mr. G. Stainton, acting as the solicitor of Eliza Annie Collins, inquiring whether the keeping of a shop for the sale of patent medicines by a midwife would be deemed misconduct within the meaning of Section 3, V., of the Midwives Act. The Board decided that Mr. Stainton should be informed that the keeping of a shop for the sale of patent medicines by a midwife was highly undesirable and that any midwife so doing acted at her own peril.

The Board considered the report of the sub-committee on H.R.H. Princess Christian's Maternity Home and decided that as it appeared on investigation that all usual inquiries were made by the authorities of the Home, so much of the Board's resolution of Dec. 17th, 1908, dealing with the question as follows the word "Authority" should be rescinded—viz., the words "but it also thinks that the authorities of

the Home will see that it is to their interest to redouble their precautions in selecting women to act as midwives in connexion with the Home." The Board also decided that the midwife under whom one of the individuals concerned in this inquiry was trained, should be required to explain her testimonial, which appears to have misled the authorities of the Home.

The secretary reported that Jane Emily Inglis of Leeds, who had pleaded guilty at the Central Criminal Court to an offence under Section 11 of the Midwives Act, 1902, had received from the Recorder the sentence of 21 days' imprisonment.

The Board directed that the following leaflet drawn up by the Chairman should be distributed:—

Inasmuch as misapprehension seems to exist with regard to the meaning of Rule C. 1 (1): "She must have ..... attended and watched the progress of not fewer than 20 labours, making abdominal and vaginal examinations during the course of labour" (see also Schedule, Form III.):

The Board wishes to point out that the word "examinations" (in the plural number) is to be taken in connexion with the word "progress," and as implying such a number of examinations as will enable the pupil to "watch the progress" of the labour. The word "frequent" is advisedly not used.

BRITISH MEDICAL BENEVOLENT FUND.

AT the February meeting of the committee 20 cases were considered and grants amounting to £190 were made to 16 of the applicants. Appended is an abstract of the cases relieved.

Widow, aged 37 years, of L.R.C.P. Edin. No income. Endeavours to support herself by letting lodgings but has great difficulty in making ends meet. Only child unable to help. Relieved six times, £70. Recommended by Dr. Robert Blair. Voted £12.

Widow, aged 84 years, of M.D. Aberd. Quite unprovided for at husband's death 16 years ago and dependent on two daughters who are governesses. Recommended by Dr. C. Theodore Williams, Vice-President. Voted £18.

Widow, aged 50 years, of L.R.C.P. Irel., L.R.C.S. Edin. Ought to receive £40 a year from property in Ireland, but tenants refuse to pay the rent. Three children unable to help. Recommended by Dr. H. Macnaughton Jones. Voted £12.

Daughter, aged 48 years, of L.R.C.P., L.R.C.S. Edin. Has maintained herself for several years by teaching but has recently been operated upon for malignant disease and is now practically destitute. Recommended by Mr. James Taylor. Voted £18.

Daughter, aged 47 years, of M.R.C.S. Eng. Used to be fairly provided for, but, owing to great depreciation of her investments and unavoidable expenses due to ill-health and two surgical operations, is now obliged to seek a home with a relation who can ill afford to help. Recommended by Mr. S. Knaggs. Voted £10.

M.D. Glasg., aged 70 years. Has been incapacitated for the last nine months and is now at an end of his resources. No children. Recommended by Sir R. Douglas Powell, Vice-President, and by Sir Thomas Barlow, Vice-President. Voted £12.

Daughter, aged 41 years, of late M.R.C.S. After father's death took to nursing, but contracted blood poisoning and has never recovered; is now permanently incapacitated and quite deaf. Recommended by Dr. S. J. Ross. Voted £12.

Daughter, aged 57 years, of M.D. Edin. Since father's death 40 years ago has supported herself by teaching, but finds it increasingly difficult to do so, and is now broken down in health and ordered to take a rest. Recommended by Mr. G. B. Forge. Voted £12.

M.R.C.S. Eng., aged 66 years. Quite incapacitated for the last year. Income less than £1 a week derived from sickness allowance and a small Poor-law pension. Three daughters, but only one self-supporting, the other two being chronic invalids. Recommended by Sir Clifford Allbutt, Vice-President. Voted £18.

Widow, aged 67 years, of F.R.C.S. Eng. Only income £20 a year. No children. Health failing. Relieved five times, £40. Recommended by Dr. R. Paramore. Voted £5.

Daughter, aged 61 years, of late M.R.C.S., L.R.C.P. Income £30 a year derived from two charitable institutions. Is quite blind and in bad health. Relieved four times, £32. Recommended by Mr. F. A. Osborn, honorary local secretary. Voted £10.

Widow, aged 69 years, of M.R.C.S., L.S.A. Since husband's death several years ago has supported herself by acting as nurse-companion, but now finds increasing difficulty in obtaining cases and has exhausted her small savings. No children. Relieved four times, £35. Recommended by Sir Victor Horsley, Vice-President. Voted £10.

Widow, aged 40 years, of M.D. R.U.I. Quite unprovided for at husband's death ten years ago. Now acts as a housekeeper, receiving a home for herself and boy (a candidate for Epsom College) in lieu of salary. Relieved ten times, £119. Recommended by Sir Constantine Holman, Vice-President. Voted £12.

Daughter, aged 52 years, of late M.R.C.S. Was left an orphan, quite unprovided for, when five years old, and now acts as a companion but receives no salary and requires a little help for unavoidable expenses. Relieved once, £5. Recommended by Dr. Henry Hetley. Voted £5.

Widow, aged 47 years, of M.B. Durh., M.R.C.S. No income. Lets lodgings. Two children (one a boy at Epsom College). Relieved once, £12. Recommended by Mr. Alfred Gillingham. Voted £12.

Daughter, aged 57 years, of late L.S.A. Endeavours to support herself by letting lodgings; no other source of income. Relieved once, £10. Recommended by Mr. Henry Power and Dr. W. H. S. Fosbery. Voted £12.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 5th, 1831.

WESTMINSTER MEDICAL SOCIETY.

Saturday, February 19, 1831.

Mr. CHINNOCK in the Chair.

EXTRAORDINARY RESULT FOLLOWING THE ADMINISTRATION OF CRUDE MERCURY.

Mr. CHINNOCK related the following extraordinary case, communicated to him by Dr. James Blundell. A patient, attended by Mr. Eccles of Rotherhithe, had suffered from obstinate constipation. Every remedy usually resorted to under such circumstances had been administered by that gentleman without effect, when Dr. Lister's attendance was requested. He ordered half an ounce of crude mercury to be administered, and to be repeated twelve hours after if the bowels were not relieved. The ounce was given by Mr. Eccles himself; the object was not merely to produce action by its specific weight, but the Doctor hoped some chemical change might occur. A blister had been applied to the scrobiculis cordis, and complete vesication was produced previous to the exhibition of the medicine. An enema was also administered. Very shortly after the administration of the second dose of quicksilver, the intestines were emptied. There was an appearance of mercury in a state of oxydation in the stools. The patient complained of great uneasiness in the blister, and begged Mr. Eccles' attention to it. On examination, he found there were "scores of globules of mercury the size of pins' heads, scattered over the blistered surface;" some of these, subsequently, were collected by Mr. Eccles to form a large one, thus proving without doubt, that it was mercury in its metallic form. This case was observed narrowly by Dr. Lister, and Mr. Owen, a respectable surgeon of Chancery Lane, as well as Mr. Eccles. The details, as before mentioned, were given to Mr. Chinnock from Dr. Blundell's note book, with permission to relate it to the Society.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8241 births and 6024 deaths were registered during the week ending Feb. 27th. The annual rate of mortality in these towns, which had been equal to 17·5 and 18·1 per 1000 in the two preceding weeks, further rose to 19·1 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these towns averaged 17·7 per 1000, and in London the mean rate during the same period was equal to 18·1 per 1000. The lowest recorded annual death-rates in these towns during last week were 6·9 in Walthamstow, 7·6 in Hornsey, 10·8 in Barrow-in-Furness, and 11·3 in Leyton; the rates in the other towns ranged upwards, however, to 25·6 in Rochdale, 26·3 in St. Helens, 27·1 in Tynemouth, and 29·4 in Aston Manor. In London the recorded death-rate during the week was equal to 19·9 per 1000. The 6024 deaths from all causes in the 76 towns last week showed a further increase of 315 upon the numbers returned in the two previous weeks, and included 584 which were referred to the principal epidemic diseases, against 453 and 515 in the two preceding weeks; of these 584 deaths, 318 resulted from measles, 111 from whooping-cough, 66 from diphtheria, 38 from scarlet fever, 32 from diarrhœa, 18 from "fever" (principally enteric), and one from small-pox. The deaths from these epidemic diseases in the week under notice were equal to an annual rate of 1·9 per 1000, against 1·4 and 1·6 in the two preceding weeks; in London the recorded rate from these diseases was equal to 1·8 per 1000. No death from any of these epidemic diseases was registered during last week in Birkenhead, Brighton, Gateshead, Leyton, Norwich, or in seven other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to

7·9 in Warrington, 8·2 in Smethwick, 9·2 in Aston Manor, and 9·9 in St. Helens. The fatal cases of measles in the 76 towns, which had been 188 and 274 in the two preceding weeks, further rose to 318 in the week under notice, and caused annual death-rates equal to 4·0 in Birmingham, 5·2 in West Hartlepool, 5·8 in Warrington, 6·6 in St. Helens, 6·7 in Smethwick, and 8·0 in Aston Manor. The 111 deaths from whooping-cough also showed a further increase of 29 upon the numbers returned in recent weeks; the highest annual rates from this disease during the week were 1·4 in Nottingham and in Warrington, 1·8 in Preston, 2·0 in Coventry, 2·2 in St. Helens, and 2·3 in Wigan. The 66 fatal cases of diphtheria showed a further slight decline from recent weekly numbers, but included 22 in London and its suburban districts, four in Birmingham and Aston Manor, four in Liverpool, seven in Manchester and Salford, and three in Bradford. The 38 deaths from scarlet fever exceeded the number in the previous week by two, and included 11 in Liverpool and two in Bournemouth. The 32 deaths attributed to diarrhœa showed an increase of four upon the low number returned in the previous week. The 18 deaths referred to "fever" also showed a considerable further decline from the low numbers in recent weeks; the two recorded in Hanley were, however, equal to an annual rate of 1·5 per 1000. The fatal case of small-pox occurred in Bristol. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily declined in the eight preceding weeks from 3557 to 2910, had further decreased to 2825 at the end of last week; the new cases of this disease admitted to these hospitals during last week were 292, against 312, 289, and 273 in the three preceding weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 556, 441, and 487 in the three previous weeks, rose again last week to 546, and exceeded by 179 the corrected average number in the corresponding week of the five years 1904–08. The causes of 54, or 0·9 per cent., of the deaths registered in the 76 towns during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week under notice were again duly certified in Leeds, Bristol, West Ham, Manchester, Newcastle-on-Tyne, Nottingham, and in 44 other smaller towns; the 54 uncertified causes of death in the 76 towns last week included, however, 14 in Birmingham, five in Gateshead, and four both in Liverpool and in Sunderland.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 18·2 and 19·8 per 1000 in the two preceding weeks, further rose to 20·0 in the week ending Feb. 27th. During the first eight weeks of the current quarter the annual death-rate in these eight towns averaged 18·8 per 1000, and exceeded by 1·1 the mean rate during the same period in the 76 large English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 12·8 and 13·0 in Leith and Greenock to 21·6 in Paisley and 21·9 in Dundee. The 714 deaths from all causes registered in the eight towns last week showed a further increase of eight upon the numbers returned in the two previous weeks, and included 81 which were referred to the principal epidemic diseases, against 73 and 82 in the two preceding weeks; of these 81 deaths, 40 resulted from whooping-cough, 14 from diphtheria, 12 from diarrhœa, nine from "fever," and three both from measles and scarlet fever, but not one from small-pox. These 81 deaths were equal to an annual rate of 2·3 per 1000, exceeding by 0·4 the mean rate during the week from the same diseases in the 76 English towns. The fatal cases of whooping-cough in the eight Scotch towns, which had been 49 and 41 in the two preceding weeks, further declined to 40 in the week under notice, and included 29 in Glasgow, five in Aberdeen, and two each in Edinburgh, Dundee, and Paisley. The 14 deaths from diphtheria showed a further increase upon the numbers in the two previous weeks; four were returned both in Glasgow and in Dundee, three in Edinburgh, and two in Aberdeen. Of the 12 deaths attributed to diarrhœa, six occurred in Glasgow, three in Dundee, and two in Aberdeen. The nine deaths referred to "fever" showed an increase upon recent weekly numbers, six being certified as enteric and three as cerebro-spinal fever; they included six in Glasgow. The fatal cases both of measles and scarlet fever showed a slight decline; all the three deaths from measles occurred, however, in Aberdeen. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 131, 137, and 148 in the three preceding weeks, further rose last week to 166, and exceeded by 29 the number returned in these towns in the corresponding week of last year. The causes of 14, or 2·0 per cent., of the deaths registered in the eight towns last week were not certified; in the 76 large English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 24·3, 25·1, and 25·8 per 1000 in the three preceding weeks, declined to 24·3 in the week ending Feb. 27th. During the first eight weeks of the current quarter the death-rate in the city averaged 24·7 per 1000, whereas the mean rate during the same period did not exceed 18·1 in London and 18·8 in Edinburgh. The 186 deaths of Dublin residents from all causes during the week under notice showed a decline of 11 from the number in the previous week, and included 17 which were referred to the principal epidemic diseases, against 13 and 10 in the two previous weeks. These 17 deaths were equal to an annual rate of 2·2 per 1000; the rate from these epidemic diseases in the same week was equal to 1·8 in London and to 1·0 in Edinburgh. Of the 17 deaths from these epidemic diseases in Dublin last week, seven resulted from whooping-cough, five from diarrhœa, four from fever, and one from measles, but not one either from scarlet fever, diphtheria, or small-pox. The fatal cases of whooping-cough, fever, and diarrhœa showed an increase, while those of measles showed a decline of three. The 186 deaths registered during the week included 36 of infants under one year of age and 60 of persons aged upwards of 60 years, differing but slightly from the numbers in the previous week. Four inquest cases and two deaths from violence were registered last week; and 52, or 27·9 per cent., of the deaths occurred in public institutions. The causes of six, or 3·2 per cent., of the deaths registered in Dublin last week were not certified; in London the causes of all but one of the 1847 deaths were duly certified, while in Edinburgh 2·1 per cent. of the causes of death were not certified.

VITAL STATISTICS OF LONDON DURING 1908.

IN the accompanying table statistics of sickness and mortality in the City of London and in each of the metropolitan boroughs are summarised for the year 1908. The mortality figures relate to the deaths of persons actually belonging to the various boroughs and are obtained by assigning all deaths occurring in institutions to the boroughs in which the deceased persons had previously resided. With regard to the notified cases of infectious disease, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 7·4 per 1000 of the population, estimated at 4,795,757 persons in the middle of last year; in the three preceding years the rates had been 7·0, 7·5, and 8·6 per 1000 respectively. Among the various boroughs the rates last year ranged from 4·3 in Hampstead, 4·7 in Kensington, 5·1 in Chelsea and in the City of London, 5·4 in St. Marylebone, 5·5 in the City of Westminster, and 5·6 in Hammersmith and in Stoke Newington, to 9·0 in Shoreditch, 9·2 in Battersea, 9·5 in Deptford, 10·7 in Poplar, 11·3 in Stepney, and 12·2 in Bethnal Green. Four cases of small-pox were notified in London last year, against 74, 31, and eight in the three preceding years; of these four cases, two belonged to St. Pancras and one each to Westminster and Hackney. The prevalence of scarlet fever showed a slight decrease last year, 22,072 cases being notified, against 20,329 and 25,925 in the two preceding years; among the various metropolitan boroughs this disease was proportionally most prevalent in Hackney, Finsbury, Bethnal Green, Stepney, Poplar, Bermondsey, Battersea, and Deptford. The Metropolitan Asylums Hospitals contained 3498 scarlet fever patients at the end of last year, against 3410, 3787, and 4956 at the end of the three preceding years; the admissions during the year

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING THE YEAR 1908.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1908.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON	**4,795,757**	**4**	**22,072**	**8002**	**4**	**1357**	**13**	**228**	**4203**	**85**	**35,968**	**7·4**	—	**1524**	**548**	**724**	**984**	—	**225**	**2**	**2592**	**6599**	**1·35**	**67,353**	**13·8**	**113**
West Districts.																										
Paddington	150,923	—	682	150	—	31	1	6	105	1	976	6·4	—	35	15	16	11	—	4	—	52	133	0·87	1897	12·4	111
Kensington	182,752	—	453	238	—	42	1	11	132	1	878	4·7	—	32	9	27	7	—	5	—	89	169	0·92	2390	12·9	126
Hammersmith	124,012	—	394	204	—	31	—	6	69	1	705	5·6	—	15	11	13	19	—	5	—	74	137	1·09	1759	14·0	124
Fulham	171,562	—	596	400	—	39	—	17	127	4	1183	6·8	—	71	17	32	34	—	10	—	113	277	1·59	2155	12·4	118
Chelsea	75,049	—	174	141	—	17	—	3	52	—	387	5·1	—	12	8	12	17	—	5	—	36	90	1·18	1106	14·5	114
City of Westminster	170,545	1	627	187	—	41	—	6	81	3	946	5·5	—	23	7	16	8	—	6	—	42	102	0·58	2191	12·6	111
North Districts.																										
St. Marylebone	126,867	—	411	119	—	34	1	8	126	2	701	5·4	—	25	13	14	13	—	6	—	39	110	0·85	1831	14·2	64
Hampstead	92,654	—	280	64	—	25	1	6	33	—	409	4·3	—	5	7	5	5	—	5	—	12	39	0·40	799	8·5	72
St. Pancras	237,075	2	952	308	1	61	—	8	158	5	1495	6·2	—	46	20	22	69	—	10	—	88	255	1·06	3547	14·7	115
Islington	349,091	—	1411	530	—	97	1	17	236	7	2299	6·5	—	80	31	57	55	—	18	—	112	353	1·01	4682	13·2	106
Stoke Newington	54,015	—	202	65	—	11	—	4	25	2	309	5·6	—	10	5	1	6	—	4	—	19	45	0·82	677	12·3	96
Hackney	235,253	1	1276	389	—	66	—	12	238	7	1989	8·3	—	75	31	45	44	—	7	—	163	365	1·52	3145	13·2	111
Central Districts.																										
Holborn	54,466	—	194	60	—	25	—	2	46	—	317	5·7	—	11	7	5	8	—	5	—	23	59	1·07	906	16·4	80
Finsbury	96,007	—	409	170	—	49	—	4	95	3	730	7·5	—	44	13	16	25	—	12	—	95	205	2·09	1816	18·6	113
City of London	19,252	—	53	29	—	7	—	1	9	—	99	5·1	—	3	—	2	1	—	—	—	2	8	0·40	346	17·7	95
East Districts.																										
Shoreditch	115,227	—	600	210	—	105	—	6	127	6	1054	9·0	—	51	29	13	24	—	11	—	117	245	2·09	2042	17·4	144
Bethnal Green	131,066	—	1010	278	—	83	—	6	246	2	1625	12·2	—	104	40	28	42	—	13	—	102	329	2·48	2275	17·1	136
Stepney	310,706	—	2356	658	3	98	2	9	423	2	3553	11·3	—	264	55	75	129	—	14	1	262	800	2·53	5176	16·4	127
Poplar	171,516	—	1280	315	—	61	—	14	191	5	1866	10·7	—	82	37	33	73	—	14	—	155	394	2·26	2764	15·9	126
South Districts.																										
Southwark	210,442	—	775	270	—	48	—	15	234	6	1348	6·3	—	77	24	32	50	—	7	—	188	378	1·76	3488	16·3	136
Bermondsey	127,910	—	641	252	—	58	—	9	168	3	1131	8·7	—	107	25	23	22	—	12	1	109	299	2·30	2428	18·8	146
Lambeth	321,344	—	1454	345	—	66	3	10	225	14	2117	6·5	—	101	42	45	50	—	8	—	141	387	1·18	4336	13·3	93
Battersea	183,873	—	1152	366	—	41	—	7	150	3	1719	9·2	—	48	24	22	39	—	6	—	83	222	1·19	2278	12·2	110
Wandsworth	289,506	—	1261	591	—	61	—	13	209	5	2140	7·3	—	44	21	37	62	—	7	—	104	275	0·93	3403	11·6	98
Camberwell	280,022	—	1054	398	—	36	—	10	233	2	1733	6·1	—	54	24	41	54	—	7	—	126	306	1·06	3603	12·7	106
Deptford	117,539	—	723	208	—	28	—	4	171	—	1134	9·5	—	33	7	10	24	—	8	—	75	157	1·32	1643	13·8	125
Greenwich	109,110	—	428	223	—	35	—	2	106	—	794	7·2	—	16	6	18	31	—	9	—	60	140	1·25	1396	12·6	119
Lewisham	156,627	—	620	471	—	34	3	6	91	—	1225	7·7	—	46	11	43	30	—	4	—	63	197	1·25	1748	11·0	87
Woolwich	131,346	—	601	368	—	20	—	6	91	1	1087	8·1	—	10	9	21	32	—	3	—	48	123	0·92	1516	11·4	94
Port of London	—	—	1	5	—	7	—	—	6	—	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

numbered 20,862, against 17,592, 18,622, and 23,953 in the three preceding years. Diphtheria also showed a slightly decreased prevalence last year, the number of notified cases being 8002, against 6482, 8045, and 8771 in the three preceding years; the greatest proportional prevalence of this disease occurred in Fulham, Bethnal Green, Stepney, Battersea, Wandsworth, Greenwich, Lewisham, and Woolwich. The Metropolitan Asylums Hospitals contained 1241 diphtheria patients at the end of last year, against 995 and 1168 at the end of the two preceding years; 6797 cases were admitted during the year, against 6478 and 7303 in the two preceding years. The number of cases of enteric fever notified last year was 1357, against 1600 and 1394 in the two previous years; among the several boroughs this disease was proportionally most prevalent in Holborn, Finsbury, the City of London, Shoreditch, Bethnal Green, Poplar, and Bermondsey. There were 147 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last year, against 78, 134, and 119 at the end of the three preceding years; 708 new cases were admitted during the year, against 831, 934, and 768 in the three preceding years. The greatest proportional prevalence of erysipelas occurred in Hackney, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Bermondsey, and Deptford. The 228 cases of puerperal fever notified during the year included 17 which belonged to Fulham, 17 to Islington, 15 to Southwark, 14 to Poplar, 13 to Wandsworth, 12 to Hackney, and 11 to Kensington. Of the 85 cases notified as cerebro-spinal meningitis 14 belonged to Lambeth, seven to Islington, seven to Hackney, six to Shoreditch, and six to Southwark.

During the year under notice 67,353 deaths of persons belonging to London were registered, equal to an annual rate of 13·8 per 1000, against 15·1 and 14·6 in the two preceding years; in the ten years 1898–1907 the average rate of mortality was 16·7 per 1000. Among the various metropolitan boroughs the lowest death-rates last year were 8·5 in Hampstead, 11·0 in Lewisham, 11·4 in Woolwich, 11·6 in Wandsworth, 12·2 in Battersea, and 12·3 in Stoke Newington; the highest rates were 17·1 in Bethnal Green, 17·4 in Shoreditch, 17·7 in the City of London, 18·6 in Finsbury, and 18·8 in Bermondsey. In the western group of boroughs the mean rate was 12·9, in the northern 13·2, in the southern 13·2, in the eastern 16·5, and in the central 17·8. The deaths from all causes included 6599 which were referred to the principal infectious diseases; of these, 1524 resulted from measles, 548 from scarlet fever, 724 from diphtheria, 984 from whooping-cough, 225 from enteric fever, two from ill-defined pyrexia, and 2592 from diarrhœa, but not any from small-pox or from typhus. These 6599 deaths were equal to an annual rate of 1·35 per 1000; in the three preceding years the death-rates from these diseases were 1·70, 1·93, and 1·42 per 1000, the average annual rate for the ten years 1898–1907 being 2·09 per 1000. The death-rates last year from these principal infectious diseases ranged from 0·40 in Hampstead and in the City of London, 0·58 in the City of Westminster, 0·82 in Stoke Newington, 0·85 in St. Marylebone, and 0·87 in Paddington, to 2·09 in Finsbury and in Shoreditch, 2·26 in Poplar, and 2·30 in Bermondsey, 2·48 in Bethnal Green, and 2·53 in Stepney. The 1524 deaths from measles were 503 fewer than the corrected average number for the five preceding years; among the various metropolitan boroughs this disease was proportionally most fatal in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The 548 fatal cases of scarlet fever were 33 in excess of the corrected average number; the greatest proportional mortality from this disease was recorded in Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The 724 deaths from diphtheria were equal to the corrected average number in the five preceding years; among the various metropolitan boroughs this disease showed the highest proportional mortality in Fulham, Hackney, Bethnal Green, Stepney, Poplar, Bermondsey, and Lewisham. The 984 fatal cases of whooping-cough were 610 fewer than the corrected average number; this disease was proportionally most fatal in St. Pancras, Finsbury, Bethnal Green, Stepney, Poplar, and Greenwich. The 227 deaths referred to "fever" were 52 below the corrected average number in the five preceding years; the highest "fever" death-rates were recorded in Chelsea, Stoke Newington, Holborn, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 2592 fatal cases of diarrhœa were nearly 900 fewer than the corrected average number; the greatest proportional mortality from this disease occurred in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last year from these principal infectious diseases was 23·3 per cent. below the average for the preceding five years.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 113 per 1000 last year, against 129, 115, and 131 in the three preceding years; the average rate for the ten years 1898–1907 was 143 per 1000. The rates of infant mortality in the year under notice ranged from 64 in St. Marylebone, 72 in Hampstead, 73 in Lambeth, 80 in Holborn, 87 in Lewisham, 93 in Lambeth, and 94 in Woolwich, to 126 in Kensington and in Poplar, 127 in Stepney, 136 in Bethnal Green and in Southwark, 144 in Shoreditch, and 146 in Bermondsey.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Fleet-Surgeon William Hackett has been placed on the retired list at his own request (dated Feb. 26th, 1909).

The following appointments are notified:—Staff-Surgeon: J. R. Muir to the *Pembroke*, additional, for disposal. Surgeon: J. H. Burdett to the *Victory*, additional, for Haslar Hospital. Surgeon and Agent: Mr. C. Legg has been appointed Admiralty Surgeon and Agent at Tooting Graveney, S.W.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel J. Will, late principal medical officer, Uganda; Major J. C. Morgan, from Naini Tal; Captain D. Ahern, from Karachi; and Captain H. T. Stack, from Sitapur, have been appointed to the Cork District. Major C. M. Fleury, from Malta, has been posted to the Southern Command.

Lieutenant-Colonel James Will, from the Seconded List, to be Lieutenant-Colonel (dated Feb. 20th, 1909). Lieutenant-Colonel Henry J. Wyatt retires on retired pay (dated March 3rd, 1909).

The undermentioned Lieutenants, on probation, are seconded under the provisions of Article 300, Royal Warrant for Pay and Promotion, 1907 (dated Jan. 30th, 1909):—William H. O'Riordan, Charles T. V. Benson, William P. McArthur, Francis W. M. Cunningham, Eustace M. Parsons-Smith, and Harry R. Edwards.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st West Lancashire Field Ambulance: Captain David Smart to be Major (dated April 1st, 1908).

3rd Southern General Hospital: The undermentioned to be officers whose services will be available on mobilisation (dated March 3rd, 1909):—To be Lieutenant-Colonels: William Thomas Freeman, Francis Henry Hawkins, William James Maurice, and Horatio Percy Symonds. To be Majors: George Stewart Abram, William Collier, Arthur Percy Dodds-Parker, Lansdown Murray Guilding, Ernest Malliam, John Alfred Parry Price, William Arthur Pernow Waters, and Richard Henry Anglin Whitelocke. To be Captains: Edmund Cecil Bevers, Henry Milford Clarke, Norton Burroughs Clowes, Herbert Edward Counsell, Charles Arthur Coventon, William Duigan, William James Foster, John Charles Richard Freeborn, Alexander George Gibson, George Herbert Rose Holden, Robert Ernest Humphry, George Frederick Murrell, Frank Grégoire Proudfoot, William Byass Prowse, Robert Ritson, William Edward Robinson, Richard Harvey Sankey, Walter Bernard Secretan, Walter John Turrell, and Amyas Theodore Waterhouse.

For attachment to units other than Medical Units.—Surgeon-Lieutenant John Evans Phillips, from the Cheshire (Earl of Chester's) Imperial Yeomanry, to be Lieutenant, with precedence as in the Imperial Yeomanry (dated April 1st, 1908). Percy Thomas Tolputt to be Lieutenant (dated Nov. 26th, 1908). The promotion of Captain Harry T. Challis, to the rank of Major bears date May 27th, 1905, and not April 1st, 1908, as stated in the *London Gazette* of Dec. 18th, 1908.

IMPERIAL YEOMANRY.

The North of Ireland: The resignation of his commission by Surgeon-Major Edward C. Thompson, which was announced in the *London Gazette* of Jan. 22nd, 1909, is cancelled.

DEATHS IN THE SERVICES.

Sir John Watt Reid, K.C.B., H.P.K., R.N., recently, at the age of 86 years. He entered the Royal Navy as Surgeon in 1845, became staff-surgeon in 1854, fleet-surgeon in 1866, deputy inspector-general in 1874, and inspector-general in 1880. He retired in 1888. He served in the *Inflexible* and in the *London* in the Black Sea until the fall of Sebastopol (Crimean and Turkish medals and Sebastopol clasp); in the *Belleisle*, hospital ship; in China during the war of 1857–59 (China medal); in the *Nebraska*, hospital ship, at Cape Coast Castle, at the end of the Ashantee campaign (mentioned in despatches, promoted to deputy inspector-general); promoted to inspector-general and appointed medical director-general in 1880.

THE HEALTH OF THE ARMY.

In a recent memorandum relating to the Army Estimates for 1909–10, issued as a Parliamentary paper, Mr. Haldane, Secretary of State for War, says: "The time has come when we may gauge the results on the health of the army of the reforms in the Royal Army Medical Corps which were instituted in 1902. We are sufficiently removed from the disturbing influences of the South African war upon the normal statistics to be able to contrast the wastage from deaths and invaliding at the present day with that of the period preceding the war. A comparison of the hospital admission-rates, death-rates, rates of invaliding, and constantly sick-rates of the first and last years of the decennial period 1898–1907 in India, in the United Kingdom, and in the Colonies is given below:—

India.

Year.	Hospital admissions per 1000.	Deaths per 1000.	Invalids sent home per 1000.	Invalids finally discharged the Service per 1000.	Constantly sick per 1000.
1898	1454	20	39	19	90
907	756	8	25	8	46
Colonies.					
1898	1000	13	44	11	60
1907	502	5	19	9	32
United Kingdom.					
1898	649	3	—	17	37
1907	438	3	—	14	24

It should be mentioned that the fall in the admission- and constantly sick-rates is not to be attributed wholly to diminished incidence of disease. It is partly due to an administrative improvement by which men with slight ailments are not removed to hospital but are treated in barracks as out-patients. But the lowered death- and invaliding-rates show the true effects of efforts at disease prevention. The same results are shown, for specific diseases, in the curves published in the Army Medical Department Report for 1907–08."

INDIAN MEDICAL SERVICES.

In the House of Commons on March 2nd, in reply to Dr. Rutherford, Mr. Buchanan said that there was no fusion of the two medical services in India in time of war; the Royal Army Medical Corps worked with British field hospitals and the Indian Medical Service with native field hospitals. Various suggestions for amalgamation had received consideration, but either they had not been thought likely to lead to reduction of establishment or expenditure or that they might involve a risk of a breakdown of the medical organisation in time of war.

ROYAL FREE HOSPITAL.—The Lord Mayor has kindly promised to preside at the 81st annual meeting of the hospital, to be held at the Mansion House on Wednesday, March 10th next, at 3 P.M., when the claims of the hospital for increased public support will be advocated.

Correspondence.

"Audi alteram partem."

THE SECTION OF ANÆSTHETICS OF THE ROYAL SOCIETY OF MEDICINE AND THE PROPOSED GENERAL ANÆSTHETICS BILL.

To the Editor of THE LANCET.

SIR,—I am led to think that the silence of the Odontological Section of the Royal Society of Medicine concerning the Anæsthetics Bill may give rise to some misapprehension, and as I happen at the moment to be the president of the section I hope that you will kindly allow me to make a brief statement.

The simple fact is that in keeping silence the section is following an old tradition of the Odontological Society from which the section sprang, the tradition, namely, that being a scientific society it did well to exclude from its deliberations all matters political or legislative. It is felt that this custom, which has prevailed for so many years, is a good precedent to follow, partly because the custom has in the past been found to be a salutary one; and partly because by maintaining it the section is aware that it is acting in harmony with other sections having similar traditions; but chiefly because in another organisation the dental profession possesses a recognised mouth-piece for the expression of its views on matters political. One of the chief functions of the British Dental Association is to further the administration and, if necessary, the amendment of, enactments which, bearing upon dental practice, have for their end the safeguarding of the public. And there is every reason to believe that the Association will, at the proper time, make such representations as will throw a good deal of light upon the question of the administration of anæsthetics in dental cases. At a recent meeting of the Metropolitan Branch of the British Dental Association a resolution was unanimously passed protesting against the Bill's attitude towards qualified dentists and urging the inclusion of a clause dealing with local anæsthetics. And this being so, the Odontological Section is, it is believed, taking the right course in declining to enter upon a controversial question, to deal with which it would have to step outside its proper province.

So far, Sir, I have spoken in an official capacity. But I should be glad if you will permit me to take this opportunity of making one or two non-official remarks—for which I am alone responsible—in regard to the correspondence recently published in your columns. Let me begin by saying that any Bill which has for its object the prevention of those evils that spring from unregistered practice, be it medical or dental, cannot but have the whole-hearted approval and the staunch support of dental as well as medical practitioners. But it is quite another thing when a Bill appears which avowedly aims at preventing fully qualified dentists from pursuing a course hitherto sanctioned, not only by long usage but by common sense and experience.

Dr. Dudley Buxton has magnanimously urged the prevailing view held by those actually engaged in the practice of dentistry—the view, namely, that qualified dentists by virtue of their dental qualification pure and simple, are or should be fully qualified to administer nitrous oxide gas. It is clearly a point of view which must be reiterated and insisted upon if one is to judge the weight of those who oppose it by the heat of their antagonism. Dentists as such are, we understand, to be in the future prohibited from the administration of *any* general anæsthetic. Why? Presumably because their training does not fit them for assuming the responsibilities involved. Nobody denies that much more might be, and indeed ought to be, done, to equip the student with an adequate training in the use at any rate of nitrous oxide, but there should be no more difficulty in doing this in the case of the dental than in that of the medical student. As to the past, the proof of the pudding, Sir, is in the eating, and I venture to think that the following questions are pertinent at the present moment. 1. How many of the 13 fatal cases referred to by Dr. Hewitt and Mr. Bellamy Gardner as having occurred during the past 20

years, occurred in the hands of registered dentists? 2. How many of those cases occurred in the hands of men holding a dental diploma? 3. What proportion do such fatal cases as have occurred in the hands of qualified dentists hold to the number of cases in which, during the same period and in the hands of the same class of practitioners, nitrous oxide has been safely administered? 4. Taking fatal cases which may be shown to have occurred when "gas" has been administered by men holding a dental, but only a dental, qualification, what proportion do such fatalities hold to the number of recorded cases in which the anæsthetic has been administered by men holding a medical qualification?

I venture to think, Sir, that to such questions as these explicit and categorical answers must be given, and answers which conclusively prove the justice and propriety of the course proposed by the promoters of this Bill, before it can be maintained with any show of right or reason that men holding a dental qualification should be debarred from administering an anæsthetic which is so essentially bound up with their daily practice and in the administration of which, as I believe, statistics will show that they have so clean a record.

Reference is made by one of your correspondents to the large number of dentists whose friendship he enjoys and he says that "practically all agree with him" that *all* general anæsthetics, including nitrous oxide, should be administered by medical men. What exactly the "large number" may really be it is scarcely worth while to inquire, for London is not Great Britain, and certain highly select West-End practices are as but a drop in a bucket in comparison with those in the suburbs and in the country; and having been brought into close acquaintance during the past 30 years with large numbers of representative dentists up and down the country I venture to assert, without hesitation and without fear of contradiction, that the overwhelming majority of dental practitioners in this country are of a very different opinion to that held by Dr. Hewitt's friends.

The opinion of dentists in London and in other large centres who have ready access to the invaluable services of anæsthetists of long training and experience is one thing, but quite another thing is the opinion of country practitioners, who dread nothing so much as submitting their patients to the tender mercies of a general practitioner untrained in anæsthetic work. It is true, no doubt, that the number of dentists who seek aid at the hands of trained anæsthetists tends steadily to increase, for they are glad enough to shift the responsibility of administration and to delegate its duties to those who, making the administration of anæsthetics their business and practising it every day of their lives, must manifestly be better able to assume the responsibility in question. And, further, there is little doubt but that this delegation of special work will more and more be practised wherever the trained anæsthetist is to be found. But to compel dentists, all and sundry, to delegate anæsthetisation —not to specialists, but to medical men who cannot for a moment be compared with the anæsthetist holding a hospital appointment and giving himself entirely to the special branch of work—thus to compel dentists would not merely be a great injustice to them, but would, it is fair to contend, inflict no small injury on the public.

There is one other point, and it is this. Is it not somewhat significant that the only two cases that Dr. Hewitt describes in detail are cases that occurred in the hands of persons not simply unqualified but unregistered? Surely such cases are beside the mark and only tend to darken counsel when the question under discussion is the propriety or otherwise of registered dentists being considered safe administrators of nitrous oxide. So far as *unregistered* men are concerned, there can, of course, be no two opinions. But Dr. Hewitt in his enthusiasm is a little apt to overshoot the mark and runs the risk of damaging his own case. And, by the way, the words "cabal" and "influence" come somewhat piquantly from him of all persons to those who have been behind the scenes and who are familiar with the facts that led to the preposterous right-about-face as expressed in certain resolutions diametrically opposed to each other in intent, the last of which now lies shelved in the archives of the Royal Society of Medicine.

In conclusion, Sir, I should like to ask whether it is proposed by the promoters of this Bill to leave untouched the administration of local anæsthetics? One thing is very certain. Apart from the question of qualified dentists being fit or unfit to administer "gas," such a Bill as that which has been so ambiguously blessed by the Section of Anæsthetics must, if enacted, inevitably lead to a widely extended use *and* abuse of local anæsthetics. In view of the grave dangers involved in the injection of potent drugs by untrained and ignorant persons, it is more than a question whether the Bill, if it should ever become an Act, would not simply be a leap out of the frying-pan into the fire.

I am, Sir, yours faithfully,

Wimpole-street, W., March 2nd, 1909. LEONARD MATHESON

THE TREATMENT OF SLEEPING SICKNESS: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—I have read with much interest the account of the discussion on cerebro-spinal meningitis at the Sheffield meeting of the British Medical Association last August. More especially have I noticed the results obtained by Dr. Ivy McKenzie and Dr. W. B. M. Martin by their method of introducing locally, by spinal puncture, a highly immune serum which they obtained from the blood of patients who had recently recovered from the disease or, as in two successful acute cases, who were still running a course. These latter were injected with their own sera taken on the sixth and seventh day of their illness respectively. It has occurred to me that a somewhat similar method of serum-therapy might be tried in cases of trypanosomiasis and sleeping sickness.

Although cerebro-spinal fever and trypanosomiasis differ very markedly, the one being a bacterial, the other a protozoal disease, yet there are certain points of resemblance between them. In both the organism producing the disease is found in the blood and in the cerebro-spinal fluid. At least this is so in advanced cases of sleeping sickness. In both there is that "lymphatism" described by Westenhoeffer and Symmers in cerebro-spinal fever, and in both the mesenteric glands may show marked hyperæmia and hæmorrhage. In both also the final stress of the disease falls on the cerebro-spinal system, and though the one is an acute and the other a chronic disease, cerebro-spinal fever may run a very chronic course, producing an extreme marasmus which cannot be surpassed even in the closing scenes of typical sleeping sickness. At the same time this resemblance is of minor importance. The question is if in sleeping sickness the cerebro-spinal canal is a *locus minimæ resistentiæ*. Does the cerebro-spinal fluid show a marked lack of trypanocidal substances? So far as I can ascertain, this matter has not been fully investigated. We know that the blood of patients suffering from trypanosomiasis possesses trypanocidal bodies, and blood serum has been used therapeutically both by subcutaneous and intravenous injection. Why should it not be tried intraspinally?

In the past great difficulty has been experienced in attacking the trypanosomes present in the cerebro-spinal canal, and Kopke has made special efforts to overcome the difficulty when treating patients with atoxyl and other chemical substances. It is true that comparatively few cases of human trypanosomiasis recover, but a suitable serum might be obtained from the blood of patients subjected in the first instance to chemo-therapy. A combined treatment might prove useful, attacking the trypanosomes in the blood by some of the more promising of our present drugs, and attacking those in the cerebro-spinal fluid by performing lumbar puncture and injecting the patient's own serum or the serum from a case which is improving, obtained by defibrinating and centrifuging the blood. The latest work on the cerebro-spinal fluid in sleeping sickness is that by Broden and Rodhain, but they do not approach the subject from this aspect. The cellular content of the fluid seems to vary and Nettan-Larrier has reported a very severe case with cerebro-spinal symptoms in which the fluid was very poor in cellular elements. This may point to the canal being a *locus minimæ resistentiæ*, to employ once more the phraseology of Dr. McKenzie and Dr. Martin.

It would seem that so far as the cellular contents go the fluid in human trypanosomiasis may approximate to the conditions found in cerebro-spinal fever, a fact which is rather in favour of adopting the line of treatment indicated. I admit it is merely a suggestion, and one possibly based on none too stable a foundation, but in the present state of our knowledge everything likely to prove beneficial should be

tried in cases of sleeping sickness. I am sending a copy of this note to Sir David Bruce in Uganda for his consideration and I propose to carry out experimental work in this direction here as soon as possible. If the idea has been voiced beforehand I can only plead the difficulty of getting at the full literature on the subject and apologise for having, as one may say, "carried coals to Newcastle."

I am, Sir, yours faithfully,
ANDREW BALFOUR, M.D. Edin.,
Director, Wellcome Research Laboratory, Khartoum.

THE INFLUENCE OF ATHLETIC SPORTS ON THE PHYSICAL STATE.

To the Editor of THE LANCET.

SIR,—For some years past I have had the opportunity of watching the athletic undergraduate of this University in health and sickness at close quarters, and have been able to convince myself that his physical state is different from that of the undergraduate who does not take part in athletic exercises, and that this state is one of slow development which can be watched, and these men cannot be judged by the standards applicable to healthy men who are not athletic. When it is watched some points become evident; for instance, the fall in the rate of the pulse, the decrease in the difference between the rates of the morning and before exercise and the evening and after exercise, both changes becoming more and more marked, while the healthy man continues regularly to take part in hard physical exercises.

There are other points which can be seen to become prominent. To observe these changes carefully it is necessary to see the man before and after exercise occasionally. Not always does the progress of the various changes continue to be uninterrupted; it may cease or the changes may tend to disappear. All this can be noted and the man warned to rest for a time. This change of condition seems to me to bear upon the question of the effect produced by athletics at schools, inasmuch as it can be seen to be present in school athletes who have lately come up to the University, some of whom are under 18 years of age and many under 19.

Would it not be worth while to have every boy who wishes to take part in any form of athletics examined on his arrival at school at the beginning of term, and again after any unusual trial of strength, until the medical man on the spot can satisfy himself that the boy has the power to develop along the right lines.—I am, Sir, yours faithfully,

Cambridge, Feb. 17th, 1909. ROBERT MICHELL.

TRANSPOSITION OF THE VISCERA OCCURRING IN BROTHERS.

To the Editor of THE LANCET.

SIR,—In an article on the above in your issue of Feb. 13th Dr. Louis Lowenthal says: "I have been unable to find on perusing the literature of the subject a single recorded case of transposition of the thoracic and abdominal organs occurring in brothers and diagnosed during life." There is at present in this institution a patient (epileptic) who shows the condition. His only brother (resident in the neighbourhood) is similarly abnormal. As it is not improbable that these cases were reported some years ago I am making inquiries on the point. Should such prove negative then I shall publish a report at a future date.

I am, Sir, yours faithfully,
D. MCKINLAY REID, M.B., Ch.B. Glasg.

Hawkhead Asylum, Paisley, Feb. 23rd, 1909.

FIBROMA OF VULVA IN A CHILD.

To the Editor of THE LANCET.

SIR,—I have recently seen a case in a child, two and a half years old, of a tumour springing from the fossa navicularis just below the hymen. The mother had noticed the little mass protruding through the vulva for a few months and desired its removal. It was one inch long and one-third of an inch wide and somewhat soft and slippery on examination. It was removed by snipping through the pedicle after its ligation. On microscopical examination the polypus has the following appearances. The surface is everywhere covered by a layer of stratified squamous epithelium showing in places œdematous and catarrhal changes. The great bulk of the polypus is composed of well-formed fibrous tissue, rich in blood-vessels, the majority of which possess a well-developed muscular coat. Scattered amongst the fibrous stroma are extensive areas of round-celled infiltration, the cells of which are mainly polynuclear leucocytes. The tumour is obviously a vascular fibroma which has undergone an inflammatory change as a result of irritation of the surface and subsequent besmearing with boric acid in its previous treatment. I am disposed to regard the condition as one of great rarity in a child so young. Dr. John T. Hewetson has my best thanks for helping me to examine and report this specimen. I am, Sir, yours faithfully,

Birmingham, Feb. 24th, 1909. LEWIS GRAHAM.

THE CLINICAL VALUE OF HÆMOMANOMETER OBSERVATIONS.

To the Editor of THE LANCET.

SIR,—I have read Dr. William Russell's book on "Hypertonus and Arterio-Sclerosis" and other of his writings, and I cannot find any proof of his contention that the obliteration method fails to give the true readings of blood pressure in man. It may fail; the arterial wall may come into play; but we want definite proofs, not opinions.

Dr. Martin Flack and I have put forward two methods of testing the accuracy of this method, which have been communicated to the Physiological Society and without adverse criticism. The first method is to apply one armlet to the arm and another to the leg and to note the obliteration in the radial and posterior tibial arteries and see whether in different postures the readings vary in accordance with the column of blood which separates the two armlets. It is highly improbable that this will occur if the arterial wall comes into the readings. The second method is to place one armlet round the upper and a second round the lower arm (on the same side). Find the pressure required in the upper armlet to obliterate the radial pulse—say 150 mm. Hg. Lower the pressure 5 mm. Hg in this armlet and keep it at that. The veins blocked by that pressure will fill as the arterial blood comes through. Raise the pressure in the lower armlet to over 150 mm. Hg. Choose a vein above this armlet. Stroke it empty past the next valve. Relax the pressure in this armlet until the vein fills from below and read the pressure then. If it comes out at 145 mm. Hg the obliteration pressure which was found to be 150 mm. Hg is correct within 5 mm. Hg, for none will assert that the wall of a superficial vein takes any measurable pressure to obliterate it. Here are two good methods, and I would ask clinicians to investigate their cases of high pressure by these methods. As far as we have gone we have not found serious error in the obliteration method.

I am, Sir, yours faithfully,

Loughton, March 1st, 1909. LEONARD HILL.

To the Editor of THE LANCET.

SIR,—Might I claim a little more of your space in order to thank Dr. Russell for his consideration of my criticisms but also to reply, as I do not think he has put quite a fair construction on my contention? I hope Dr. Russell does not attribute to me the suggestion that contraction of the vessel lowers the blood pressure inside it, for there is nothing in my letter suggesting this. The heart, I take it, requires a certain pressure in the aorta in order that an adequate blood-supply may be maintained in the coronary vessels, and the mechanism by which this is carried out is a correlative one between ventricle and systemic vessels; therefore, contraction of the periphery does play a part in diminishing the work of the heart, for although the blood pressure may be maintained the same the output at each emptying of the ventricle need be less or the rhythm need be slower. This to my mind is a state of things which does exist in cases of ventricular failure in which compensation can just be established with the patient at complete rest; but when any greater demand is put upon the periphery necessitating increased blood-supply, the ventricle is unable to sustain the necessary pressure in the arteries to maintain the required supply and failure of compensation is at once manifest.

With reference again to Dr. Russell's case in which he suggests a pressure not exceeding 20 millimetres in the aorta, I venture to remark that if such was the case he would not

even feel the flicker of a pulse in the radial artery. In support of this I would mention that when using Hill and Barnard's sphygmometer on the brachial artery I find that it is common to notice that the first vibration of the needle after obliteration of the vessel, and which indicates a return of the pulse-wave beneath the armlet, precedes the tactile pulse n the radial artery by 15, 20, or even 25 millimetres. So much for the sensitiveness of the finger. Dr. George Oliver makes a similar observation in connexion with the use of his instrument.

I am, Sir, yours faithfully,

STEPHEN G. LONGWORTH.

District Asylum, Melton, Suffolk, Feb. 27th, 1909.

THE EXPERIMENTAL TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—At a meeting of the governors of the Middlesex Hospital the director of the Cancer Research Laboratories made the following statement: "Why the cancer started at all, why it was sometimes localised at one spot, sometimes widely disseminated through the body, why it killed, how it killed, were questions to which no sure answer had hitherto been given. Yet the cause or prevention of cancer depended upon knowledge of the answers to these questions." Surely this means that medicine is an exact science, and not an art as has always been supposed, and that it is forgotten that in the past treatment has come first and the cause second. I give an example of the evil which may follow such statements. A woman attended at the Middlesex Hospital a few months ago and was told that she was suffering from cancer and that nothing could be done for her. A medical man, who is not in practice, heard of the case and offered to try a form of treatment which, at the worst, could have done no harm. This offer was declined, partly because the patient had been told at the hospital that nothing could be done. My brother and I have suggested that experimental treatment should be regulated by the systematic examination of the blood, and we have certainly found that there is no marked lessening in the amount of disease unless the blood can be brought nearly to a normal condition.

I am, Sir, yours faithfully,

Upper Berkeley-street, W., March 1st, 1909. SKENE KEITH.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.

To the Editor of THE LANCET.

SIR,—I much regret that owing to an unavoidable change in plans the first two of the series of five lectures announced under the auspices of this league for March 4th and 11th have had to be postponed. The announcement as to the dates and the place for the remaining lectures on March 18th and 25th and April 1st will be sent out later.

I am, Sir, yours faithfully,

March 1st, 1909. F. JAMES MATHESON.

PANCREATIC SECRETION IN THE TREATMENT OF DIABETES.

To the Editor of THE LANCET.

SIR,—In Dr. W. M. Crofton's interesting communication on Pancreatic Secretion in the Treatment of Diabetes in THE LANCET of Feb. 27th, the urine is stated on p. 608 to have had a specific gravity of 1027 and a sugar content of 10·5 per cent. Is there not some mistake here? The specific gravity 1027 is barely within the diabetic range, yet 10·5 per cent. of sugar is near the upper limit of diabetic records. Moreover, if we take the fermentation quantitative test and allow the whole of the 27 degrees of specific gravity above the 1000 as due to sugar, to the exclusion, therefore, of all other urinary in gredients, we should only get 27 grains of sugar per fluid ounce of urine; this works out at just under 6·2 per cent. This matter is, of course, a detail which in nowise detracts from the general interest of the communication.

I am, Sir, yours faithfully,

HARRINGTON SAINSBURY.

Wimpole-street, W., March 2nd, 1909.

THE CHICAGO STOCKYARDS REVISITED.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

PRESENT IMPROVEMENTS JUSTIFY RECENT DENUNCIATIONS.—A FOUNTAIN BRUSH FOR WASHING BEEF.—EXPENSIVE ALUMINIUM WHEELBARROWS AND ASEPTIC MECHANICAL REVOLVING TABLE.

DURING the four years that have elapsed since the shortcomings of the Chicago stockyards were first revealed in these columns notable alterations have been effected. It was in the month of January, 1905, that my four descriptive articles appeared. These were reproduced by the Chicago press and gave rise to many comments and much agitation. As a result reformed methods of inspection were introduced in the stockyards by the Chicago sanitary authorities on August 7th, 1905, and, as was recorded in THE LANCET at the time, with startling results. Of the 3,935,000 pounds of food condemned and destroyed as unfit for consumption during the year, 85·5 per cent. were so condemned during the five months following the introduction of the reforms. In the course of the ensuing year Mr. Upton Sinclair's novel "The Jungle" appeared and popularised the whole question. Then it was that Mr. Roosevelt appointed Mr. Neill and Mr. Reynolds to visit the stockyards and to see whether the accusations made were justifiable. The report which these gentlemen drew up and the photographs which they took fully confirmed the descriptions given in this journal. The United States Department of Agriculture also took action and nominated a commission which investigated the question on the spot. This commission issued a report in which it quoted 29 passages from THE LANCET and 11 from "The Jungle." These passages, the criticisms of the United States Department of Agriculture, and my answer to them were published in full on July 14th, 1906. Throughout my criticisms and contentions have been confirmed. The grievances were recognised as genuine and the best proof that can be given of such recognition is the fact, to which I can now bear witness, that notable efforts have been made and considerable sums of money spent to do away with some of the worst features. A further proof that my criticisms were justifiable may be found in the eagerness with which visitors are shown the improved parts of the stockyards and the beautiful photographs of the same which have been issued to the public. A large number of these photographs have very courteously been sent to me. The United States Department of Agriculture confirmed my strictures and said: "It is true in many instances, sanitary features, such as light and air, are sacrificed to increase the capacity of the plants; we shall see that improvement has ensued upon these lines."

In a series of popular postcards entitled "Chicago Meat Scandal Series," there is one where the description of the picture is as follows: "Process of cleansing. Good meat and bad meat alike washed with the same brush. No antiseptic used, simply warm water. Note bloody condition of squeegee. Also drippings falling back into the pail of water." That is how it was. Now I have before me a set of photographs issued by Messrs. Swift and Co., and these are catalogued as follows: "No. 3. Washing and trimming of beef. The final dressing operation before going to the cooler. Construction showing ventilation and admission of sunlight into the workroom, also the use in the left foreground of fountain brush" (see Fig. 1). The next illustration (see Fig. 2) is entitled "Detailed view of fountain brush used in washing beef, furnishing a constant supply of fresh water." These photographs, issued by the great packing firms, are a very practical answer to former indictments; they are pictures of places where the defects denounced have been removed. At the same time, it must be recognised that in the first of the illustrations given the amount of sunlight admitted is not excessive. Here, however, we have distinct amelioration of the conditions as could be seen when comparison was made with some other portions of the stockyards that still remain in a non-regenerate condition. The fountain brush is a genuine improvement. Formerly the brush, which is very like a broom, was simply dipped in a pail of water and the sides of beef were rubbed down. Some of the dirt would drop into the pail and each time the brush was dipped in more dirt was introduced, and this was used to wash the next carcass. Thus in a very short time the water used for

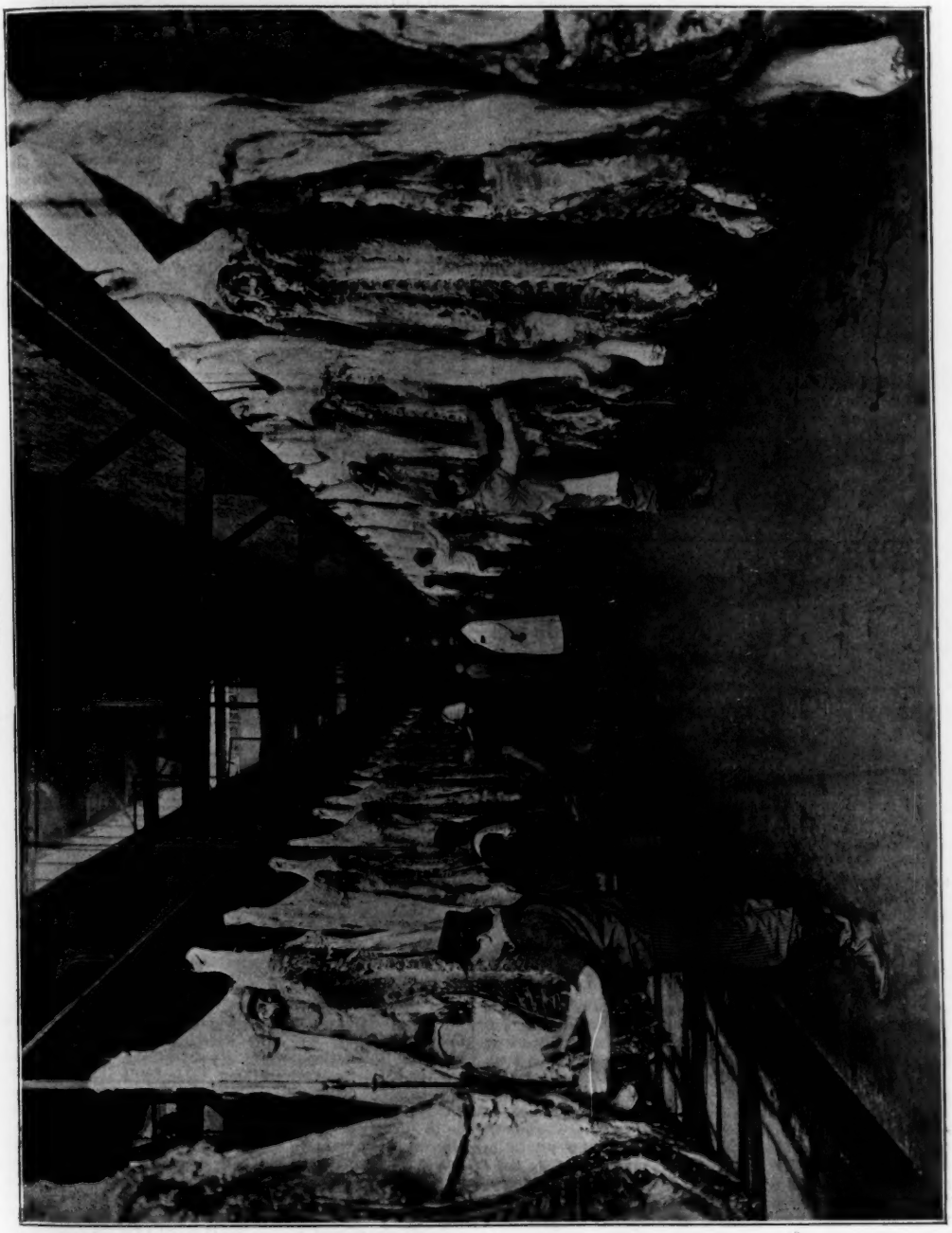


FIG. 1.

Washing and final dressing of beef before going to the cooler. Light and ventilation secured from "lanterned" roof.

cleaning the beef was itself anything but clean. Sometimes instead of a brush made of bristles a rubber squeegee was used. Now, as the photograph shows, the pail of water, which soon got dirty, is done away with altogether. A flexible pipe comes down from a water main that passes overhead. The nozzle of the pipe is affixed close to the brush and discharges clean water on to the brush just as the sides of beef are scrubbed. This is undoubtedly very much better than

FIG. 2.

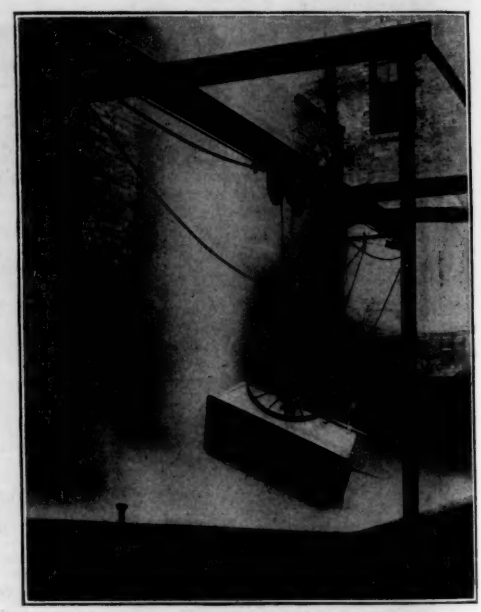
Detailed view of a fountain brush used in washing beef; the brush is furnished with a constant supply of fresh water direct from the main.

the old process, for it secures a greater measure of cleanliness. The same water cannot be used over and over again, for only clean water direct from the main flows on to the brush.

Another excellent innovation is the substitution of metallic for wooden wheelbarrows and trucks. These are used for conveying pieces of meat about and should be non-porous and easy to clean. But the old wooden trucks which were shown to me, and which are in some places still in use, cost £7, while the new trucks made of aluminium with galvanised-iron running gear cost £17. These latter and also some galvanised-iron tubs and buckets are now being substituted for the cheaper wooden utensils. This is notably the case in Libby's boning department. Here, in the gloom of a huge floor so broad that the light from the windows is altogether insufficient, men handle great pieces of meat and cut the bones out. With one hand they drive a hook into the flesh and hold it, while with the other they cut out the bone. Thus it is claimed that the meat is not often touched by the hands of these workpeople. The tables at which they work are made of wood and they are now introducing a thicker and harder wood; for if wood is necessary for the cutting the harder the wood the easier to keep clean. On the other hand, the wooden legs of the tables are being replaced by iron ones. All this is good, and although the transformation is as yet only partially realised, still it shows that the packers are awakening to knowledge of sound sanitary procedure. Perhaps the most radical change in regard to trucks and wheelbarrows is the provision of a large tank of boiling water in which, with the aid of a rope and pulley, the truck or wheelbarrow is lifted and then lowered, so that it may thus be cleansed and disinfected (Fig. 3). In this and other ways the necessity of cleanliness is recognised and some interesting improvements have been accomplished, but the first conditions of cleanliness are the purifying action of a plentiful supply of fresh air and the purifying action of direct rays of sunlight, and this seems to be not yet sufficiently acknowledged in Chicago. The boning department at Libby's works where the new and costly aluminium wheelbarrows are being introduced is dark in places and poorly ventilated. Aluminium plant is very much better than plant of porous and absorbing wood and praise must be given to those packers who have faced the expensive innovation, but plenty of sunlight and fresh air are also necessary.

Another innovation which is very ingenious and is doubtless also very costly has been introduced by Messrs. Armour and Co. This they describe as a "New mechanical beef dressing table made of corrugated malleable iron, sterilised with hot water and caustic soda at every revolution. The

FIG. 3.



Vat for cleansing all conveyances and wheelbarrows used to carry meat. A metal barrow is about to be plunged in it.

most radical innovation ever inaugurated in the packing industry. Sanitary to the highest degree. Armour and Company" (Fig. 4). The description is quite correct, but the illustration, while it shows the application of aseptic ideas to the revolving table, indicates that there are close at hand recesses and corners where accumulations of dust might remain undisturbed. The mechanical table itself is a thoroughly ingenious invention and Messrs. Armour and Co. are entitled here to the credit due to a valuable enterprise. Such a table must render good service if used in a properly constructed abattoir, where the beef, on being removed from an aseptic table, will be at once conveyed to some light, well-ventilated department where absolute cleanliness reigns, but if regard for these essentials is anywhere neglected the value of the table will be minimised. The revolving and ribbon-shaped table carries, it will be seen, the carcasses along so that they may be dressed as they pass before various attendants. Then when it has finished its upper horizontal course it turns round a drum and

FIG. 4.

Mechanical beef-dressing table. The leaves as they revolve pass through a trough of hot water and caustic soda and are further scoured by water jets.

is immersed in a long tank of hot water placed under the table and in which caustic soda has been dissolved. Just as each leaf of the table emerges from this bath jets of water play upon it and give it a final scour. Undoubtedly this is a remarkable piece of machinery. The very critical might suggest that if the entire premises were constructed on different principles such special care over this one detail would not be necessary, but this would be a grudging recognition of the fact that the complaints published have borne fruit and that efforts are being made towards genuine improvement.

(To be continued.)

SANITATION IN INDIA.

THE PREVALENCE OF ENTERIC FEVER AMONGST BRITISH TROOPS IN INDIA.

(FROM A SPECIAL CORRESPONDENT.)

IX.[1]—*Clothing, Blankets, &c., as Carriers of Infection.*

UNDER the heading of fabrics may be considered as possible sources or carriers of infection all kinds of clothing, bedding, blankets, sheets, and cleansing cloths for wiping either the utensils in which food is cooked or served at table, as well as glass cloths and ordinary dusters. If any of the fabrics included in this category become infected from the excreta of either enteric fever patients, ambulant cases, or "carriers" it has been proved that not only are they capable of conveying enteric fever but also that such infection may remain active and virulent for a very considerable time. Owing to certain outbreaks being attributed to the infectibility of army blankets at the close of the South African war, Firth and Horrocks carried out a series of most interesting and valuable experiments in the laboratories of the Army Medical School at Netley. These observers found that they were able not only to recover the bacillus typhosus from uniform soiled with typhoid bacilli up to 87 days after infection, but that clothes soiled with enteric fæcal matter contained active infection up to 17 days. They also found that the typhoid bacillus could survive on uniform serge up to ten days, notwithstanding that for 50 hours of this period the cloth was exposed to direct sunshine at Netley. The latter observation is of importance owing to the popular belief in the efficiency of sunshine as a bactericidal agent. Pfuhl working independently on the same lines has recovered the bacillus typhosus on linen up to 97 days after infection. Reinche has also proved bacteriologically instances of infection from the same source. For these reasons the danger of infection from any kind of fabric should be apparent not only in tropical climates but also in the United Kingdom.

At Bareilly in India during 1901 an outbreak of some 19 cases of enteric fever for a time baffled the military authorities, until attention was directed to the outdoor washing grounds where the garrison were having all their clothing washed by native washermen. It was noted that some ground in close proximity had recently been utilised for trenching the night soil, which consisted of fæcal matter and urine, and that this ground had been taken into use some 43 days prior to the occurrence of the first case of enteric fever in barracks. The soldiers' clothing were found drying within 100 yards of these trenches. From a damp sterilised cloth experimentally exposed Aldridge isolated the bacillus coli and the bacillus enteritidis. The washing grounds were closed as a result and the outbreak disappeared.

The whole system of washing of clothing in India is open to grave sources of infection. In most stations the native washermen take private clothing to their homes for several days to do the "making up"—starching and ironing, and

[1] Nos. I., II., III., IV., V., VI., VII., and VIII. were published in THE LANCET of Jan. 2nd (p. 62), 9th (p. 134), 16th (p. 197), 23rd (p. 277), and 30th (p. 353), and Feb. 6th (p. 427), 13th (p. 501), and 20th, 1909 (p. 575), respectively.

many cases of small-pox have been traced to such clothing from their hovels. The infection to clothing by ambulant cases of enteric fever and also the infective clothing of "carriers" are quite unprovided against, and this clothing can readily infect the general washing water during the period such cases continue out of hospital in the case of the former. In the case of "carriers" strenuous attempts have lately been made to detect as many as possible, but even when discovered one is at a loss to know what to do with them.

Washermen in India being natives are, like all unskilled labourers in that country, very careless in the most elementary principles of sanitation. Cases are on record where after washing one's clothes they let out shirts, &c., on hire in the bazaar to their friends to attend domestic functions. A case is reported of a corpse being laid out in "hired" sheets in this way which belonged to an officer of the garrison. Clothing is seldom or never boiled owing to the cost of fuel. Kitchen cloths (jharans) are probably a most dangerous source of many kinds of disease, and they are usually washed in any dirty water when washed at all. A good example of cholera infection carried by these articles reported in THE LANCET of Jan. 25th, 1908, p. 270, may be recalled. A commissioner of an Indian Province while on tour stopped with his wife and some friends for luncheon at a Dâk bungalow. Some few hours afterwards the majority of the party were seized with cholera and the commissioner, his wife, and another lady died. The sanitary officer of the district on inquiry found that the disease was directly caused by infection conveyed by jharans (plate cloths) which had been washed just before the meal in a stagnant pool in which a cholera corpse (a native) was lying. These jharans had been used to wipe the plates off which the party had eaten their food.

There are thus at least three ways by which clothing and other materials are liable to become infected in India during the process of washing and being made up afterwards: (1) by being washed in polluted water, the existing pollution of the water being often added to by that of the clothes washed at the time or beforehand; (2) by being hung up to dry near infection; and (3) by being stored before delivery in the washermen's houses. Under existing arrangements the provision of means for washing soldiers' clothes is made by the cantonment authorities from their funds and all these dangers should be avoided and not allowed to depend on the fluctuations of cantonment finance. Rooms should be provided for storing and making up the clothes which should never be allowed into the washermen's dwelling-houses. It is understood that a plan of such a building has been designed and that its adoption is under consideration. It will contain rooms for boiling and steaming the clothes, and ironing and storing rooms will be located in the lines of each British unit. A handcart has also been designed and is under trial for the removal of all infected clothing and bedding to hospital for disinfection. It is a metal-lined receptacle and its provision has been recommended by the "Standing Committee on Enteric Fever" appointed by the Government of India.

In the military hospitals in India regulations are enforced whereby all the bedding, clothing, furniture, and utensils of the patients and enteric fever wards are conspicuously marked with a large capital "E," to enable them to be carefully guarded and sterilised before further use; the duster cloths (jharans) are the only articles which occasionally might be carried away by the native servants, and these might be rendered more conspicuous if they were dyed a brilliant red, whereby they could be more easily distinguished. The clothing worn by all attendants, nursing sisters, and orderlies in charge of enteric fever patients should be invariably changed before the wearers leave their tour of duty and should not be removed from the hospital unless disinfected. Up to a few years ago the nursing orderlies carried out their daily work in the wards in their ordinary khaki uniform, but on recognition of the dangers of infection spreading to barracks by the medium of clothing special white suits for nursing purposes have been provided on a fixed scale for nursing orderlies attending enteric fever cases. Tents which there is any reason to believe have been exposed to infection are disinfected by first spraying with 1 in 40 carbolic acid and afterwards by exposure (particularly the inner surfaces) to the direct rays of the sun for at least four days.

When a soldier is admitted to hospital, his complete kit accompanies him and this (after having changed into the special hospital clothing provided) is put by in a general store, common to all clothing of the patients in hospital, unless his disease is diagnosed or suspected to be enteric fever before admission, when his complete outfit is disinfected. The clothing of a "typhoid carrier" or an ambulant case is quite likely to get into a general store of such a nature and infect the room. Or again, patients with fever which may afterwards develop into enteric fever may have their clothing put in the general store. Some arrangement is necessary to provide against such exigencies until the diagnosis is confirmed and a small room set apart for the clothing of non-diagnosed cases is necessary. The difficulty of disinfecting thick articles like great-coats and blankets where steam sterilisers are not provided has to be faced. Caldwell has found that momentary immersion in boiling water killed the bacillus coli in soldiers' shirts, but that 30 seconds were necessary in the case of great-coats and blankets. He found Sawyer's stove or an ordinary camp kettle excellent disinfectors; no damage was caused to the clothing. When available, he recommends carbolic acid 1 in 40 (boiling) as a perfect disinfectant. He found five seconds' immersion sufficient to kill all forms of life in blankets experimentally soaked in sewage effluent. This carbolic acid solution did no damage to the khaki or "blue-black" shirts. He also found that immersion in boiling water for one minute of a blanket soaked experimentally in sewage effluent failed to destroy completely either the bacillus coli or the bacillus mesentericus vulgatus. 60 seconds' immersion in a solution of boiling carbolic acid 1 in 40 appeared to destroy all developed forms of bacillary life. The danger of blankets as a source and carrier of enteric fever infection is a proven fact. Munson suspects that outbreaks of enteric fever on the so-called virgin soil of remote uninhabited places may be due to soldiers carrying infection either in their own bodies or excreting it in their urine, on blankets, &c. A case was recorded in India (1903) of a man acquiring infection by using a quilt which had covered a patient suffering from enteric fever. During the South African war blankets had of necessity to be passed from man to man, very many of whom were either developing or had already developed enteric fever or dysentery. Disinfection was not only impossible but out of the question; occasionally a blanket got a washing in a spruit when circumstances were favourable for such a measure. When the war was over many of these blankets were shipped home by dealers and sold by auction and enteric fever broke out in various places in England. The origin of these outbreaks was traced to the blankets.

Bermuda, which had the highest admission ratio per 1000 of strength of any military station in the British Empire, reduced its enteric incidence by introducing steam sterilisers for disinfection of the clothing of all convalescents, "contacts," and suspects, and putting a stop to interchange of blankets, &c., between individuals and units in charge of station. During the South African war, vermin (lice, &c.) were spread by the interchange of blankets, as they were all mixed up during the daytime in the carts they had been carried in on the march. If lice can be spread enteric fever can spread by the same means.

I have now examined in these columns the less common paths whereby enteric fever is spread because of their importance in being more often the channels that are overlooked and for this reason are probably the more dangerous. There still remain for consideration the sources of infection due to "bacilli carriers," water, milk, food, conservancy, latrines, and urine, and I hope to deal with these at some future date as space allows.

THE RADIUM INSTITUTE.—Captain A. E. Hayward Pinch, I.M.S. (retired), late medical superintendent of the Medical Graduates' College and Polyclinic, has been appointed director of the Radium Institute. Captain Pinch, we understand, has started for the continent in order to investigate the methods and technique in vogue at the various continental radium institutes.

THE annual report of the medical officer of the Exeter Sanatorium, which has just been issued, shows that during 1908 208 cases were treated in the institution, nearly half of the patients coming from the county of Devon. There were two deaths among the patients from the county and two amongst those from the city, giving a death-rate of 1·9 per 100 cases treated. The average stay of each patient was 50·03 days.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Liverpool Select Vestry and the Treatment of Tuberculosis: A Want of Faith.

FURTHER evidence that the select vestry is not enamoured of the scheme for the treatment of patients suffering from tuberculosis at the joint hospital at Heswall, erected and supported by the three Liverpool Poor-law authorities, was forthcoming at the meeting of the select vestry last week, when it was decided to confirm a recommendation of the finance committee declining to sanction an extension of the Heswall hospital. The proposal was to add to the institution a bungalow, to cost £1000, for the provision of 25 beds. The vestry's share of the expense would be £400. For the extension it was argued that it would materially reduce the average cost per bed of the entire establishment. The majority of the board, however, inclined to the opinion that the results of the treatment in the way of "cures" were not such as to justify further expenditure of any description. An amendment proposed by Mr. Horrigan to the effect that the proceedings of the finance committee with respect to the hospital extension be not confirmed was rejected by a majority of 20 to 6. The large body of opinion adverse to the amendment was based upon the view that the benefits conferred were not in any sense commensurate with the expenditure involved, which now worked out, it was stated, at £500 per bed. It was pretty generally admitted that the great drawback was that most of the patients who were sent to the Heswall hospital did not come within the control of the vestry at a time when the disease could be successfully dealt with, but only sought assistance when they were in a practically hopeless state. At a meeting of the West Derby guardians held a day or two after that of the select vestry, the decision of the select vestry on the matter was discussed with much warmth, the West Derby guardians disagreeing with the conclusions arrived at by the select vestry. It is now probable that a disruption will occur, the hospital being run in future by the West Derby and Toxteth boards. Nothing has been actually decided upon as yet, but it is no secret that the Liverpool select vestry has never taken kindly to the joint hospital scheme. There is no gainsaying the fact that the disease had much advanced in most of the patients seeking relief at the Heswall institution.

Sir Rubert Boyce's Mission to Barbados.

In honour of the new sanitary mission of Professor Sir Rubert Boyce to Barbados and Trinidad, undertaken at the request of the Colonial Office, a small company of friends met him at luncheon on Feb. 15th at the University Club, on the invitation of Sir Alfred Jones, the chairman of the Liverpool School of Tropical Medicine. Sir Alfred Jones, in proposing success to the mission, said that the invitation of the Colonial Office was a striking recognition of the Liverpool School of Tropical Medicine, and of the work it had done at Panama, Santos, Rio, and other places. In his opinion the tropical world was going to be entirely changed by modern scientific methods of sanitation. Mr. J. L. Griffiths, the American Consul, paid a graceful and complimentary tribute to Professor Boyce, who in briefly replying said that it was only 24 hours since he received the mandate of the Colonial Office. He was starting within the next few minutes, and he could only thank them most sincerely for their good wishes.

The Royal Infirmary: Civic Aid for the New Out-patient Department.

Since the city council acquired Parliamentary powers to make grants towards the building fund of medical charities several applications have been put in. A deputation from the Royal Infirmary waited upon the finance committee of the council on Feb. 15th and asked for financial aid towards the erection of the proposed new out-patient department. The committee, having heard the points laid before it, promised to consider the request.

Gift to St. Helens Hospital.

Mr. J. B. Leach has subscribed 250 guineas towards the fund for the extension of the hospital building.

March 2nd

NEWCASTLE-UPON-TYNE.

(FROM OUR OWN CORRESPONDENT.)

Mr. Haldane and the Officers' Training Corps.

ON Feb. 20th Mr. Haldane, Secretary of State for War, addressed the undergraduates of the College of Medicine and Armstrong College in the King's Hall, Armstrong College, on the subject of the reorganisation of the army. Sir Isambard Owen presided and with him on the platform were, in addition to Mr. Haldane, General A. J. Murray, C.B., Director of Military Training on the General Staff, Captain F. C. Garrett, commanding the Durham University Officers' Training Corps, Major Hessey, the adjutant of the corps, Colonel W. Russell, R.E., commanding the North-East coast defences, and Captain G. S. Clive of the General Staff. A large number of students was present from both Colleges, as well as several members of the teaching staffs. Mr. Haldane said that he was going to make an appeal for the help of the Colleges of the Universities of this country and in particular for the help of the two Colleges in Newcastle in the constitution of a reserve of officers. Though in other circumstances he might have spoken of the constitution of the new Officers' Training Corps, he proposed on that occasion to say a few words with reference to something that had appeared in the newspapers that morning which had a close bearing upon the problem—namely, the formation of an Imperial General Staff. Mr. Haldane then sketched in chronological order the steps by which the army had been gradually reorganised during the past three years. The first year was devoted to thinking and the outcome of that year's thought was the Army Order dated June 1st, 1907, organising the regular army at home in six great divisions and a cavalry division. That was followed shortly afterwards by the fashioning of the militia into a special reserve which on mobilisation became part of the regular army. The second line was the line of home defence which it was essential, in the interests of the highest possible efficiency, should be constituted as nearly as possible upon identical lines with the army that was to operate overseas. The regular army now consisted of six divisions beside the cavalry division at home and the Territorial Army of 14 divisions at home. The next step in the development of his scheme, Mr. Haldane explained, was taken during the visit of the Colonial Premiers in 1907. At the conference Mr. Haldane put before the Premiers of the self-governing colonies the fact that we in England were organising our citizens, the Territorial Army, on identically the same lines as those upon which the first line, the regular army, was constituted, and he suggested to them that it might be to the advantage of everybody if they could aim at the organisation of the forces in the great colonies of the empire upon the same plan, and also indicated that the general staff which had been organised at home should be constituted on a much wider basis so as to make it the school of military thought for the empire. These principles were received with many marks of approval by the Premiers and the Blue-book explaining how these principles could be put into practice was issued that morning. If these principles were acceptable, as he (Mr. Haldane) had some reason to believe they were, to the self-governing colonies and we accepted our part of the burden, then the forces of the Crown would represent an army for war of 46 divisions, equivalent to 23 army corps, which was an army as large as that of Germany and larger than that of any other country in the world. All this, Mr. Haldane explained, was possible—what they could do if they would. It needed very hard work. He had sketched his plan and indicated the slow realisation of it, and he now asked the undergraduates of Durham in the colleges of Newcastle each of them to undertake his part in the defence of his country, which he could do by joining the Officers' Training Corps, and that with profit both to himself and to the country. Mr. Haldane was enthusiastically cheered by the undergraduates who had listened throughout very intently to an exceedingly able and forcible address. I am told that Mr. Haldane was highly pleased with the manner in which his appeal was listened to and received and that in none of the other universities which he has visited was his audience so attentive and appreciative. And this impression appears to be correct, for I am informed that since Mr. Haldane's visit something over 50 recruits have joined the Officers' Training

Corps, and it is satisfactory to know that Northumberland, which was the first county in England to raise a yeomanry detachment for service in South Africa, still maintains her interest in the voluntary national defences.

University of Durham Act.

The University of Durham Act sub-committee of the Durham County Education Authority has considered the question of seeking representation on the new senate of Durham University and has resolved that a committee should represent the education authority before the Commissioners appointed under the Act, in order to urge the desirability of granting the authority representation on the senate and the council of the Durham colleges. The grounds upon which this representation is to be urged are not stated nor do reasons appear why such representation is desirable. The Durham County Education Authority appears to have no *locus standi* whatever in the University. If it contributed a sum of money yearly towards the expenses of education in the University the education authority might think it desirable in its own interest that it should have representation on the governing body of the University, but as it contributes nothing to the University chest even this possibly conceivable claim vanishes.

Glasgow University Club.

The annual dinner of the North of England Glasgow University Club was held on Feb. 18th. The guests of the evening were Sir Hector C. Cameron, professor of clinical surgery in Glasgow University, and Sir Thomas Oliver. The dinner was preceded by an address given by Sir Hector Cameron in the Medical Theatre of the College of Medicine, at which a large number of medical men and students were present. Sir Hector Cameron chose for his subject "Some Clinical Facts regarding Mammary Cancer" and in the course of a most interesting paper reviewed the results of his very large experience of malignant disease, especially from the point of view of prognosis. The conclusion at which he had arrived was that it was impossible in malignant disease to give a prognosis with any certainty of being right whatever the condition at the time the patient was first seen.

Northumberland and Durham Medical Society.

Sir Lauder Brunton has promised to give an address on "The Treatment of Heart Disease" before the members of this society on Thursday, March 18th. The annual dinner will be held the same evening, when Sir Lauder Brunton will be the guest of the society.

March 2nd.

BRISTOL.

(FROM OUR OWN CORRESPONDENT.)

University of Bristol.

Mr. E. Chaning Wills's recent donation of £10,000 has brought the University fund up to £200,000, which, taken together with property in the form of buildings valued at £55,000, overpasses the figure of £250,000 fixed by the Privy Council as the minimum capital at which the University might start. There have been 19 donors of £1000 or upwards; of these, seven are members of the Wills family, whose benefactions added together amount to £161,000. At a meeting held on Feb. 27th the governors of University College confirmed the resolution adopted by them at a previous meeting approving the Bill for dissolving the College and transferring its property and liabilities to the University of Bristol. The mover, Mr. Lewis Fry, spoke of the loss sustained by the College in the deaths of Sir Frederick Wills and Mr. Harry E. Thomas, and said that the Bill approved in their resolution had passed its first reading in the House of Lords unopposed. The Bishop of Bristol, who seconded the resolution, anticipated some delay but no serious opposition to its passage through the House.

University College Colston Society.

The collections made in connexion with the University College Colston Society since its establishment in 1900 have realised a total of £5258. At the tenth of the series of dinners, held in January last, a sum of £521 was received, so that the committee has been enabled to vote £550 towards the sustentation fund of University College. It further resolved that if and when the University College is merged into the University of Bristol the title of the society shall be changed to "Bristol University Colston Society."

Hospital Sunday Fund in Bristol.

At a meeting of the council of the Bristol Hospital Sunday Fund, held on Feb. 22nd, it was reported that up to the present £1514 had been received. It was decided at once to grant £522 to the Royal Infirmary; £433 to the General Hospital; £162 to the Children's Hospital; and £78 to the Eye Hospital. £45 were granted to three of the smaller medical charities.

Dr. Thomas Dover.

The *Bristol Times and Mirror* of Feb. 27th contains some interesting notes in reference to Dr. Thomas Dover who "invented" the well-known Dover's powder (pulv. ipecac.). In Bristol Dr. Dover is chiefly associated with the privateer *Duke* (of *Duke* and *Duchess* fame), which sailed from that port in 1708. Woodes Rogers commanded the expedition and he made Thomas Dover captain of the *Duke*, with excellent results to the venture. Dover acted as captain of the Marines, he sacked Guayaquil, and it was his ship that rescued Alexander Selkirk. When sickness (a "plague") broke out among the sailors he is said to have cured nearly 200 of them. Dr. Dover's name is mentioned repeatedly in Woodes Rogers's diary and he often acted as president of councils of war.

University College Union.

The Medical Dramatic Society gave its annual performance at the All Saints' Hall, Clifton, from Feb. 15th to 20th, the play performed being Grossmith's *Jedbury Junior*, which proved very popular. The actual total of the receipts is not yet known but it is certain that it will be a substantial sum. It is to be devoted to reduction of the debt still remaining from the purchase and finishing of the union's new athletic ground.

Bristol General Hospital.

At a special meeting on Feb. 23rd the committee of the hospital elected Miss A. E. Densham to fill the post of matron about to be vacated by Miss A. J. Angus. Miss Densham was trained at Leeds, where she acted as night superintendent and as assistant matron to the General Infirmary; for the past four years she has held the post of matron to the Northampton General Infirmary.

March 2nd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

School Inspection in the County of Carmarthen.

AT the beginning of last year the Carmarthenshire Education Committee appointed several private practitioners in the county to conduct the medical inspections of school children until the end of 1908 for a fee of 1*s.* per child examined. They were instructed to examine those children admitted since Jan. 1st, 1908, and those likely to leave school before the end of December, 1908. The last Code issued by the Board of Education requires an examination to be made of children who will leave before the end of next July; the education committee consequently asked the medical inspectors who had been appointed to continue their inspections until that date. A fee of 1*s.* had already been found to be quite inadequate, and in an interview which the medical gentlemen had with a subcommittee of the education committee it was mutually arranged that in future it should be 2*s.* 6*d.* per child, with an allowance of 1*s.* per mile for travelling beyond the first five miles. When this proposal, which does not err on the side of extravagance, for the medical officer has to transport not only himself to the schools but also a weighing machine and other apparatus, came before the full committee several members spoke indignantly of the high rate of 2*s.* 6*d.* per child, and eventually it was resolved to offer a fee of 1*s.* 6*d.* per child. The practitioners of the district will be well advised if they refuse to accept these lowered terms and insist upon those which were agreed to by responsible members of the commiteee. A proposal of the subcommittee to pay £25 to one of the medical inspectors for preparing the annual report required by the Board of Education was negatived by the committee, and it was decided to offer the absurdly low sum of £10, which would

hardly repay anyone for the labour involved in compiling a report of any value.

Newport Refuse Destructor.

The question of providing a refuse destructor for Newport has been frequently discussed by the town council during the past few years and at the end of last year definite steps were taken for making such provision. At the last meeting of the council, however, it was again decided to postpone taking any action in the matter. The apparent reason for this change of front was the additional cost involved in burning the town's refuse instead of tipping it, as is now done, in different parts of the borough and in some cases quite near to the houses of the artisan inhabitants. It is only just to say that nine of the councillors out of 26 protested vigorously against the existing insanitary practice. One of them very properly said that the argument of a slight increase in the rates was contemptible when the health of the people was at stake.

Kington Cottage Hospital.

The Kington (Herefordshire) Cottage Hospital was established in 1888 and has accommodation for five patients. During last year the late Mr. Thomas Webb, who was a native of the town, bequeathed to the inhabitants the sum of £1000 to be used by them for some charitable purpose. They decided that it could be most usefully expended in improving the hospital accommodation, with the result that a new operating theatre will be provided, together with a single-bed ward and increased out-patient accommodation. Mr. Webb was engaged in business in Cardiff and was a very generous supporter of the Cardiff Infirmary, for which he defrayed the cost of a modern operating theatre and a new casualty department, besides presenting large sums for other purposes.

The Health of Exeter in 1908.

The medical officers of health of Exeter, in their annual report for 1908, which has just been issued, state that on an estimated population of 48,578 the birth-rate during the year was 23·2, the average for the past seven years being 22·31. The death-rate was 15·57 compared with the average of 15·69 for the preceding seven years. During 1908 the death-rate of infants in their first year amounted to 126 per 1000, the average for the previous seven years having been 143 per 1000. This decrease is stated to be largely due to the good work performed by the health visitor. There were 33 deaths from whooping-cough in the city during 1908, 64 from pulmonary phthisis, 55 from bronchitis, 64 from pneumonia, 66 from malignant diseases, and 37 from violence and accident.

The South Devon and East Cornwall Hospital, Plymouth.

The annual meeting of the subscribers of the South Devon and East Cornwall Hospital was held on Feb. 26th. The medical report stated that during 1908 the in-patients numbered 1317 and that 2921 out-patients were treated. The daily number of occupied beds was 126. The financial statement showed that with an ordinary income of £7726 there was a balance against the institution of £3496. The committee proposes to call a special general meeting of the governors of the hospital and to ask them to authorise the trustees to sell stock sufficient to meet this deficit. The committee in its report states that it is "glad to record that Mr. Connell Whipple, on his retirement, had accepted the appointment of consulting surgeon to the hospital and a seat on the committee as an honorary member, thus enabling the committee to retain the benefit of his sound judgment and advice."

Boric Acid as a Preservative.

At Exeter on Feb. 22nd a local grocer was summoned for selling sausages containing boric acid to the extent of 35 grains to the pound. The medical witnesses for the prosecution stated that the amount of boric acid contained in the sausages would be injurious to health, but the medical men who were called for the defence contended that there was no reason to believe that 35 grains of boric acid contained in a pound of sausages would be injurious to health. The magistrates eventually dismissed the case, the chairman stating that they found, although the facts were not in dispute, that the allegation that the article sold was injurious to health was, owing to conflicting evidence, open to doubt. He added that had the prosecution been taken under Section 6 of the Adulteration Act the bench would not have hesitated to convict, and they would suggest that if the defendants wished to avoid further prosecution they should publish on the wrapper the fact that chemicals were used.

Longevity in North Devon.

Mr. M. R. Gooding, the medical officer of health for the Bideford urban district, in his annual report for 1908, states that during the year 200 births were registered, which was a rate of 21·33 per 1000. 129 deaths occurred, giving a death-rate of 13·76, or, excluding non-residents, 11·84. 47 of the deaths were in people over 70 years of age, which Mr. Gooding considers remarkable and testifying to the longevity of residents in North Devon. 20 deaths were in children under one year, a rate of 100 per 1000 births. The zymotic death-rate was 0·53. Ten deaths were due to tuberculosis. Mr. Gooding refers to the wholesomeness of the water, but states that its insufficiency was becoming marked.

The Newport and Monmouthshire Hospital.

The annual meeting of the subscribers of the Newport and Monmouthshire Hospital was held on Feb. 26th under the presidency of Lord Tredegar. The medical report was satisfactory and the financial statement showed that the income of the hospital had increased but that a deficit of £236 remained at the close of the year; this was due to the expenses incurred on building a room for the provision of electrical apparatus and x rays.

March 2nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Registration of Nurses in Scotland.

A MEETING of those interested in the registration of nurses in Scotland was held last week in the Merchants' Hall, Glasgow. Lord Inverclyde presided and there was a crowded attendance of representatives from almost all parts of Scotland. After a few remarks by the chairman dealing with the question of promoting a Bill for the registration of nurses specially applicable to Scotland, the results of a plebiscite taken amongst nurses was put before the meeting by Dr. D. J. Mackintosh of the Western Infirmary, Glasgow. This showed that there had signed in favour of the establishment of a separate registration council for Scotland 114 matrons and superintendents of nurses, 57 assistant matrons, 218 sisters, 163 charge nurses, 736 nurses at present on duty in general hospitals, 440 private nurses, 162 Queen's nurses, 377 mental nurses in hospitals, 416 fever nurses in hospitals, and 35 private nurses trained in special and cottage hospitals, making a total of 2718. When it was put to the meeting "that it is the wish of Scottish nurses that Parliament be solicited to pass an Act establishing a separate council for the registration of nurses in Scotland," the motion was carried by a large majority, only seven voting for the amendment that there should not be a separate Nurses' Registration Bill for Scotland.

Poisoning from Sewage Gas in Glasgow.

The dangers arising from the escape of sewage gas into inhabited houses have been amply illustrated in Glasgow during the past month. The first occurrence was about a fortnight ago, when some 40 persons are said to have suffered more or less severely, and in two warehouses in the affected area business had to be suspended for a day. That the outbreak was not attended with any fatal result is probably due to the fact that a man residing in the tenement mainly affected was awakened by one of his children who had been seized with sudden and unaccountable sickness. In attending to this child he discovered that his two other children were also ill. On the arrival of the casualty surgeon from the police office the various families in the tenement were warned of their danger, when it was found that some who had fainted had to be carried into the fresh air, while others who were too weak to walk unaided had to be assisted. While the analyst at a later period of the day was engaged in procuring samples of water and air from the sewer he was overcome by the fumes and had to be removed to the Royal Infirmary where he recovered under treatment. A week later in the same district there was a series of cases somewhat of the same nature but not so widely distributed. The matter

is at present under investigation, but it is thought that either petrol or benzine had been discharged into the sewer at some point and that one or other of these fluids vaporised in the sewer and escaped at the scene of occurrence.

Girgenti Inebriate Home.

The Glasgow corporation's report on the Girgenti Inebriate Home has been prepared for transmission to the Secretary for Scotland. It is pointed out in the report that no patients have been admitted since March 7th, 1907, in accordance with the recommendation; and of the 131 patients dealt with during and up to the end of 1907 there remained in the institution at the end of 1908 19 patients. 20 had been transferred to the State Inebriate Reformatory at Perth, five were discharged unfit for treatment, three escaped from the reformatory, three escaped from guardians, three died, and 78 were discharged at the expiry of sentence. During the year eight patients were allowed out on licence under the charge of suitable guardians. Of these, four relapsed and were taken back to the reformatory, while the others gave general satisfaction to their guardians. Of the patients discharged during 1908, one discharged on Feb. 1st has been eight times convicted since discharge, one discharged on March 18th has been convicted five times, and one discharged on August 23rd has been convicted six times. Five have not been convicted since discharge, and against other five there is one conviction each. On the whole not a hopeful report.

Legacies to Aberdeen Hospitals.

By the will of the late Miss Anna Thomson, Plaidy Cottage, Turriff, the following sums are left to Aberdeen hospitals:—£100 to the Royal Infirmary, £50 to the Blind Asylum, £50 to the Sick Children's Hospital, and £50 to the Hospital for Incurables. Miss Thomson directs that the residue of her estate is to be divided between the same institutions.

Alarming Fire at a Dundee Hospital.

On the evening of Feb. 27th a fire broke out in the Royal Victoria Hospital for Incurables, Balgay, Dundee, which resulted in the complete destruction of the boiler house and laundry of the hospital. Naturally there was great excitement in the institution, especially among the patients, while among the spectators gathered to view the conflagration all sorts of alarming rumours as to the safety of the invalids were rife. The damage is estimated at between £400 and £500.

Royal Aberdeen Sick Children's Hospital: Annual Report.

The report of the Royal Aberdeen Sick Children's Hospital for the year 1908 states that during the year 2537 cases have been treated, compared with 2547 in the previous year. The average stay of each in-patient was 35 days, compared with 33 in 1907. In addition 49 convalescent children were sent from the hospital to the Eidda Home, which adjunct continues to be of indispensable aid in the working of the hospital. The ordinary expenditure for the 12 months was £2388 and the ordinary income was £1892. During the year £600 were received from the trustees of the late Mr. John Fyfe, granite merchant, for the permanent endowment of a cot, to be known as the "Barbara Fyfe" cot; and £600 from the late Mr. and Mrs. Alexander Rae of Whitehall-road, Aberdeen, for the permanent endowment of a cot, to be named the "Forbes-Rae" cot.

March 2nd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

"Clancy's Act" and the Housing for the Working Classes.

THE housing of the poor, which is a chronic scandal in Dublin, has had public attention directed to it vigorously. At the opening of the Crown business last week the Recorder of Dublin, after congratulating the grand jury on the comparative immunity from crime, proceeded to indicate the true method of preventing it. "I venture, however, even at the risk of tiresome reiteration, to direct attention to the imperative claim of our toiling poor to decent and healthy housing. Our slums are, no doubt, a baneful heritage, but if any true spirit of civism is to be found in this capital of our country it is time that the cry of the wretched toiler should no longer be stifled in the welter of worthless discussion and contention. There are nearly 25,000 families in our midst living in single rooms. Let every citizen who regards the honour of his city or his civic obligation consider what the continuance of this state of affairs means: a new generation growing up in filthy squalor and in hopeless misery, ready recruits to crime, to disease, to intemperance, and vice. I earnestly appeal to you, and through you to the citizens, to force attention to those dread miseries of disease, of crime, and of drink." At a corporation meeting on the following day the subjoined motion was proposed by Alderman Dr. J. C. McWalter:—

That the law agent and city treasurer be requested to report whether dwellings for the working classes can now be advantageously erected in some suitable streets between Ormond Quay and Britain-street under Clancy's Act (Housing for the Working Classes, 1909), and whether it is desirable to re-borrow the sums now due by this corporation for workmen's dwellings purposes under the most favourable terms of the new Act.

A heated discussion followed, during which one member asked the very delicate question, "Would it not be well if the town clerk informed the Recorder that the biggest slum-owners of this city are members of this council?" Alderman Kelly emphasised the financial difficulty of dealing with the question—over £300,000 had been spent in providing dwellings for the poor—"an enormous burden"—and £1,000,000 would be required to deal with the whole question. Meanwhile, it is very satisfactory to record that Drogheda has just decided to take advantage of the Housing for the Working Classes Act which became law in course of the last Parliamentary session. The town clerk has been directed to apply for a loan of £15,000, and the engineer instructed to make proper preparation of the necessary plans. To the credit of the Drogheda corporation it must be noted that during the past ten years they expended about £5000 in this direction, having built 42 houses for the accommodation of the working poor and their families. Time upon time their own sanitary officers kept them informed of the urgency of the want of providing sanitary lodgings on a larger scale; but the rate of interest and other conditions of the requisite loan prevented the council from undertaking a more extended scheme for meeting a necessity which was so repeatedly pressed upon them. The recent Act has furnished the wished-for facility of escape from a very painful difficulty.

Mortality in Irish Towns.

The last death-rate return for Dublin was 27·5 per 1000, which is reducible to 25·8 by exclusion of the names of persons who had been admitted from without the Dublin registration area. Of the 211 deaths registered in the city 58 were of persons under four years of age—including 25 infants under one year; and 63 were of persons over 60 years of age—including 44 over 70 years, of whom eight were octogenarians and four nonogenarians. With regard to causes of death there were 42 from the various forms of tuberculous disease—including 28 from phthisis. The infectious fevers registered four deaths from measles, two from diphtheria, and one from scarlet fever; there were also two from whooping-cough. The February return for Belfast shows a death-rate of 17·9, with the zymotic death-rate 0·6, and that from chest affections 6·4. The highest death-rate of any Irish town is that of Waterford, where it has reached the ominous figure of 40 per 1000; in Galway and Sligo—also seaport towns—it exceeds 38 in the last returns; in Newry and in Tralee it is 37. The Wexford rate in these returns had fallen from 33 (in each of the two previous weeks) to 14. On the other hand, no deaths were returned from Clonmel; while in Portadown it was but 5 per 1000, and in each of three other towns—Drogheda, Londonderry, and Lurgan—it was 8. In the other 17 principal town districts the rate exceeded 10 per 1000; in 12 of these the rate was over 20, while in seven it exceeded 30. So that it is very evident that our rural practitioners have had their hands pretty full—at least a large proportion of them—during the past weeks of an exceptionally dry and cold February.

The Belfast Maternity Hospital.

At the annual meeting of the friends and supporters of this old charity on Feb. 23rd, the 115th yearly report showed that 488 intern patients were treated during 1908 (an increase of 110 over the previous year). There were 416 extern cases. The total number of deaths was eight. There were 162 extern gynæcological cases. Financially there was an increase in subscriptions of £36, and the year ended with a balance in hand of £522.

The Society for Providing Nurses for the Sick Poor, Belfast.

At the annual meeting of this society held in the city hall, Belfast, on Feb. 23rd, it was reported that 1386 patients had been attended by the society's nurses during 1908, an increase of 95. More medical men took advantage of the nurses' services, especially in operation cases, which numbered 43. Financially the income was £15 below the expenditure.

The Samaritan Hospital, Belfast.

During the last year, according to the report read at the annual meeting on Feb. 24th, 699 patients were treated in the extern department and 202 in the wards, of whom 149 required surgical operations. Thanks to a fête last summer, which realised over £500, the funds of the hospital are in a prosperous condition, but complaint is made of the difficulty in procuring new subscribers owing to the great competition of other charities.

Belfast Sewage Works.

On Feb. 27th a number of surveyors and engineers from provincial towns visited the outfall works of the Belfast sewerage system for the purpose of inspecting the new Dibdin slate beds which are being installed there. These slate beds are used for the aerobic biological purification of sewage; they treat crude, unscreened sewage without any settling tank except for grit, the solid matters being broken down by worms and other biological organisms living on the slate in the presence of the air without forming sludge or creating any nuisance whatsoever.

March 2nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Sterilisation of Water.

M. Jules Courmont, professor in the Lyons Faculty, and M. Nogier have just made a very interesting discovery—namely, a simple physical method of sterilising water. All that is necessary is to immerse in the water to be sterilised a quartz mercury vapour lamp traversed by an electric current. This gives off a green light and in one minute water containing numerous bacteria is completely sterilised over an area of from 30 to 50 centimetres around the lamp, an effect presumably due to the ultra-violet rays emitted by the electric tube. The water is in no way altered, neither is it warmed. Lamps immersed permanently in the delivery pipes of a water-supply will assure its purity, provided only that the water be clear, as is the case when it is derived from springs. Professor Dastre has confirmed these observations and at the present time in his Sorbonne laboratory he is engaged in investigating the bactericidal properties of mercury lamps and other sources of ultra-violet rays.

The Gastric Digestion of Human and Asses' Milk.

M. Gaucher, by means of studying dogs with a permanent gastric fistula, has been able to compare the gastric digestion of human milk as against asses' milk. Both human milk and that of the ass pass through the stomach of the dog about twice as rapidly as cow's milk. But the casein is not peptonised in the stomach any more than the casein of cow's milk. The extreme digestibility of both human and asses' milk is due to the manner of curdling. The curd of human milk comes down in small flakes and that of the ass in a very loose clot. The curdled milk can thus pass out of the stomach with a minimum of trouble. M. Gaucher has described his observations at a meeting of the Academy of Sciences.

The Antimonial Treatment of Syphilis.

An interesting communication was made at the same time to the Academy of Sciences on this subject. On account of the chemical resemblance between antimony and arsenic, an element which is of established value in the treatment of syphilis, M. Paul Salmon has been led to make a research as to whether antimony were not equally effective, and he has investigated the matter in monkeys from a preventive and in man from a curative standpoint, using organic compounds of the metal. He found that the injection of these compounds rendered monkeys immune from infection, whilst metallic antimony and antimoniate of soda were ineffective under similar conditions. Tartar emetic gave inconstant results so far as concerned prevention amongst animals. In spite of this M. Salmon used the latter preparation in his therapeutical investigations on man. These experiments were successful. Tartar emetic is an active drug in the treatment of syphilis. Under its influence primary, secondary, and tertiary lesions are found to clear up, but relapses sometimes occur with great rapidity. M. Salmon says that the injections should be made daily and intravenously by preference, the dose should be of from five to seven centigrammes, increasing gradually until eight or ten centigrammes are reached.

Roux's Serum in Medical and Surgical Infections.

At the Academy of Medicine on Feb. 16th M. Darier expressed his belief that in many medical and surgical infections for which no specific serum has yet been obtained Roux's serum if given from the onset may check the infective process, alleviate the symptoms, and even lead to a complete cure. He has employed this "paraspecific" or polyvalent serum-therapy both by the mouth and hypodermically in treating ulcerative infections of the cornea, infected wounds of the eye, and especially in complications which still sometimes follow operations for cataract, where he has never failed to effect cure by this method. In diseases of the interior of the eyeball—the so-called endogenous infections—such as iritis and acute irido-cyclitis, the results following the ingestion of several spoonfuls of the serum are remarkable. The pain ceases, sleep is restored, and the sight is improved. In fact, M. Darier believes that to Pasteur's law of the specificity of serums the corollary may be added that every antitoxic serum, besides its specificness, exercises a powerful influence over all infections of less virulence, and over even very serious infections when they are thus treated from the outset.

The Treatment of Amœbic Dysentery.

On Feb. 10th at the Society of Tropical Medicine M. Vincent said that the best method of treating amœbic dysentery was based on the use of alkaline hypochlorites administered by intestinal lavage. The stools on the following day are generally normal and free from amœbæ upon which the hypochlorites are supposed to have a directly fatal action.

Gastric Paralysis Following on Amputation at the Shoulder-Joint.

M. Reynier read a paper at the Surgical Society on Feb. 10th dealing with an observation which M. Baillet had sent him describing a very acute post-operative gastric paralysis which occurred with no apparent infection in a case of amputation at the shoulder. It concerns a young man on whom M. Baillet had performed this operation for sarcoma. The gastric symptoms supervened on the third day and rapidly became more severe. On the fifth day a gastric lavage resulted in the evacuation of two litres of greenish fluid. On the next day the patient vomited spontaneously one litre of a similar liquid, and another two litres were removed by a fresh lavage. These procedures resulted in a slight improvement, but at the end of a week the patient was growing weak, and M. Baillet did a gastro-enterostomy during which operation he thought he made out a strangulation of the intestine. Nevertheless M. Baillet was of opinion that the case was one of acute post-operative gastric paralysis. M. Reynier, on the other hand, thought that it was one of those cases of post-operative duodenal obstruction which have been described of recent years and which appear to result from post-operative dilatation of the stomach. The patient in question died a few hours after the operation.

The Reform of the Medical Curriculum.

By a decree dated Jan. 11th the medical studies leading to the doctorate were reorganised. The Minister of Public Instruction, M. Doumergue, has accordingly addressed the rectors of the several academies in a circular relating to the application of this decree. The Minister rehearses the long study which has been devoted to the reform, the inquiry undertaken in all the faculties of medicine, and the work of the commission of 74 members. This commission, in the Minister's opinion, has fulfilled its task with the utmost competence and devotion. Before fixing the date upon which the reform shall come into force the Minister wishes to ascertain exactly the measures which the faculties intend to take to establish the new scheme in the most effective manner. He asks for a reasoned reply before May 1st.

March 2nd

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Proceedings of the Berlin Medical Society.

Professor Albu has read a paper before the Berlin Medical Society on Enteroptosis as a Constitutional Anomaly. He said that this anomaly is generally believed to be due exclusively to mechanical causes, and especially to a decrease of intra-abdominal pressure in pregnancy. Professor Albu, however, has found that of 3400 cases 31 per cent. were in men and 69 per cent. in women, and that enteroptosis may be present in men and women under 20 years of age and even in children. He is of opinion that enteroptosis may be of congenital and hereditary nature, because he found this condition in about 30 per cent. of newly born children, though, of course, in but a slight degree. According to him enteroptosis is a symptom of degeneration, some manifestation of a distinctly marked type. Dr. Stiller has drawn attention to the fact that patients with enteroptosis are of a special congenital conformation very like that of phthisical people. Their thorax is long and has a narrow upper aperture, and the tenth rib is floating, while another anomaly associated with enteroptosis is a preponderance of the longitudinal over the lateral development of the body. Defects are also apparent in the soft tissues. In women the mammæ diverge, the abdominal wall is flaccid and thin, and the upper part of the abdomen is sunken and the lower part prominent. Professor Albu recommended prophylactic measures to strengthen the constitution, proper food and exercises being very important. Dr. Latz showed a hysterical woman 19 years of age who for one and a half years had suffered from peculiar cooing sounds within the stomach. They were continually present day and night and were independent of the ingestion of food. They sounded as if water were being pressed into a narrow cylinder. By radiography of the stomach filled with an emulsion of bismuth it was ascertained that the stomach was sunken and contained a great air-bubble. The peculiar sound was evidently due to spasm of the cardia and of the pylorus by which the bubble was compressed. Professor Orth showed specimens from a hysterical woman who had died from tuberculosis in a small hospital in the neighbourhood of Berlin, where about 30 pins had been removed from the skin by operation. Others were detected by radiography in the neck and in the internal organs, but an operation could not be performed owing to the patient's condition. At the necropsy a large quantity of needles were found within the heart muscle, the aorta, the liver, and other organs. The organs, however, were quite healthy, the death being due to tuberculosis.

Reform of the M.D. Examination.

The rules for conferring the degree of M.D. at the University of Berlin have been simplified by a recent decision of the Medical Faculty. The degree of M.D. does not in Germany confer the right to practise medicine, which is acquired only by the State examination. A few years ago, to prevent certain abuses, the medical faculties of the German Universities decided to confer the degree only upon medical men who have passed the State examination. This decision only concerns Germans, and not foreigners, who can still take the degree without the State examination. At the same time the oral examination was virtually abolished for Germans, as it has been rendered superfluous by the State examination. The candidates had only to submit a printed thesis on some medical subject. Now the Berlin Medical Faculty has gone a step further in reform by abolishing the "solemn promotion." The "promotion" was an affair which had as much farce as solemnity about it, the solemn side being represented by the Dean of the Faculty, who presided over the ceremony in his academic robe and who received the candidate with a Latin address. The farcical side was the so-called disputation, in which the candidate had to defend three or more advertised theses. Originally it was open to anybody to "oppose" the candidate, but no real argument has been held for many years. It has become the custom for the candidate to arrange a mock disputation with some friends, the arguments *pro et contra* being previously rehearsed. After a few minutes' argument the opposers always declared themselves totally convinced by their learned friend's arguments, whereupon the dean rose and in the Latin language conferred the degree on the candidate, who swore to obey the rules and customs of the faculty and was handed his diploma. Some difficulty was likely to arise when on the invitation of the candidate a member of the public rose declaring that he disagreed with his opinions and started another argument for which the candidate was not prepared. This was sometimes arranged as a practical joke, to the great discomfiture of the candidate, who was eventually liberated by the dean declaring the discussion closed. Now the faculty has done away with these mediæval proceedings. Henceforth, after the thesis has been approved the dean will hand to the candidate, whether German or foreigner, his diploma without any public ceremony. The fees for the degree will thus become much smaller for those who have already taken the State qualification.

March 1st.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Siculo-Calabrian Cataclysm: its Sequelæ.

DISTRIBUTED throughout the cities and towns of Central and Northern Italy the survivors from the earthquake-visited region are impressing their more favoured kinsmen with their need of a rehabilitation quite other than that of their immediate wants. One-half of Italy, it would appear, scarcely knows how the other half lives; but the sudden importation of Sicilians and Calabrians into Tuscany, Liguria, Lombardy, and Venetia is bearing in upon the inhabitants of these provinces how much remains to do, how little indeed has already been done, to bring their Southern compatriots into line with them morally and socially. The Florentine and the Venetian, the Genoese and the Lombard are shocked, it seems, with the low standard of civilisation represented by the *profughi*, insomuch that, while the larger-minded, more benevolently inspired of these central and northern populations are feeling self-reproach at their previous remissness in helping forward the south, the more selfish and less enlightened are counting the hours till they can get rid of guests whose misfortune evokes less pity than their primitive manners infuse aversion and even dread. At one fashionable resort on the Ligurian seaboard, for example, a contingent of Calabrian survivors had, as a preliminary to relief and social intercourse, to be deprived of their stilettos. "How are we to defend ourselves?" was their indignant, their amazed, inquiry. "But who is going to attack you?" was the bland rejoinder, which the Calabresi had sullenly to accept, while shortly thereafter quarrelling among themselves with a ferocity which convinced their hosts that the disarming regulation had not been practised a moment too soon. Ignorance and superstition—an ignorance which means 75 per cent. unable to read or write, and a superstition expressed in strange dislikes as to the food and other forms of relief supplied them—make the task of their temporary hosts a trying, often a vexatious, and sometimes a thankless, one. Not that the recalcitrancy of the *profughi* is always groundless, though it is fair to say that when they are badly or unsympathetically dealt with it is rather in their own immediate territory than farther north. In one great Sicilian town, for instance, 200 survivors accommodated in a *ricovero* (place of shelter) burst out into mutiny against the superintendence, on the plea that the food was neither palatable nor wholesome, that the clothes supplied them swarmed with vermin, and that their discomfort was such that they would rather take their chance in the open than remain a night longer in such custody. The town council intervened in their behalf, having found that the funds liberally supplied from without had not been fairly or honourably utilised.

The Weather.

Telling severely on the sorely visited "survivors" from the south has been the exceptionally inclement winter, which within the last few days has made Tuscany, for example, little better than a "landslip from Siberia" and Florence itself almost a synonym for Tobolsk. Never "within the memory of the oldest inhabitant" (who, in spite of Mark Tapley, does occasionally "remember" something) has there been such heavy, such continuous snowfall, particularly in the central and sub-Alpine region. Cases of frostbite, of death even from cold, are reported with a frequency strange in

Italian experience, while the railway service has been retarded often with disastrous consequences to the passenger. In one train proceeding from Florence to the Riviera Ponente the inmates were snowed up for many hours, an invalid lady describing her sufferings as only second to those sometimes endured on the Russian lines. All the resources of charity are trebly in request, particularly in the large towns, for providing the poor not only with food and clothing but with dormitories and means of shelter comfortably warmed. Temporary occupation for the unemployed is amply provided for the "spazzini" (crossing-sweepers), amateur as well as professional, whose ranks are reinforced from the cabmen, whose *métier* owing to the slipperiness of the thoroughfares is suspended for the nonce. Needless to say, the sick list is an abnormally heavy one—pneumonia, complicated with influenza, claiming the majority of the cases. For the healthy and robust, however, there are compensations in the magnificent effects of landscape enjoyed from this or that "specular mount." To say nothing of the view commanded from the Duomo at Milan, or that (immortalised by Ruskin in his lecture inaugurating the Slade professorship at Cambridge) from the battlements of Turin, one has only to ascend to San Pietro in Montorio on the Janiculan or to gain the Piazzale di Michel Angelo at San Miniato to revel in a panorama which impresses the Roman or the Florentine as that of a "bijou Bernese Oberland." Nor are the artistic opportunities of the occasion left unutilised—a bevy of young sculptors having overnight worked with a will among the snow of a spacious Piazza and provided their fellow townsmen next day with a gallery of portraits, equestrian and other, which the morning sun seemed loath to play upon. All this, however, has its reverse side—one sinister feature of which is the misery as well as the increased illness and mortality already indicated and (the hotel keeping and pension interest considered) the stampede of the valetudinarian or sun-seeking world from the Italian resorts *en route* to Cairo or Biskra, at a time, moreover, when Italy can least afford to lose her winter *clientèle*.

Feb. 27th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Commitment and Discharge of the Insane Criminal.

THE superintendent of the Asylum for Insane Criminals at Matteawan, New York, Dr. R. B. Lamb, in a paper read before the State Bar Association, called attention to the large increase of commitments to that asylum in the last decade. In the year 1898 there were but five cases admitted, but in 1908 the number had increased to 43. This increase, he states, is out of proportion to the increase of the population and of lunacy, and indicates that many persons are now committed to asylums as insane rather than to prisons and penitentiaries as convicts. He urges greater care in making original commitments and increased vigilance in the matter of discharge, so that the process may not be abused and used as a shield for the really guilty. The remedy which he proposes is that it should be mandatory upon the courts, in each case, to ascertain the mental status of a defendant, should he appear insane while held on a criminal charge or interpose the plea of insanity as defence for crime, the inquiry to be made at any time previous to presentation to the jury. This would take away from the jury the authority to aquit because of insanity, and, he added, "the competency of a jury to determine a mental disease is little short of farcical." He is of the opinion that the definition of legal insanity ought to be changed so as to include cases showing a history of faulty development, neurotic tendencies, and other signs of degeneracy.

Regulation of Expert Medical Testimony.

Expert medical testimony in our courts has fallen into such disrepute during the past year that there is a combined effort on the part of the Bar Association and the State Medical Society to secure a radical reform in the method of calling medical experts into court. The draft of the Bill finally agreed upon provides that in criminal cases for homicide where the issues involve expert knowledge or opinion the court shall appoint one or more suitable disinterested persons, not exceeding three, to investigate such issues and testify at the trial; and the compensation of such person or persons shall be fixed by the court and paid by the county where the indictment was found, and the fact that such witness or witnesses have been appointed shall be made known to the jury. This provision does not preclude either the prosecution or defence from using other expert witnesses at the trial. It is specified that the Bill is not intended to apply to "witnesses testifying to the established facts or deductions of science, nor to any other specific facts, but only to witnesses testifying to matters of opinion." It is contended that the judges at *nisi prius* have power to require a greater degree of competence upon the part of persons claiming to be experts by the simple but effectual method of defining to a jury with force and precision the distinction between a witness proved to be thoroughly qualified to speak upon the subject regarding which his testimony is offered and one whose claim to speak is predicated principally upon the fact that he is paid to do so. The interest which is now manifested both in the medical and legal professions to avoid the scandal created by experts gives promise of legislation adapted to that end.

A Novel Health Crusade.

The Association of Life Insurance Presidents is considering a scheme for promoting the public health proposed by Professor Irving Fisher of Yale University. Professor Fisher is chairman of a volunteer organisation of one hundred citizens which was created by the American Association for the Advancement of the Sciences, the special function of which is to secure a national health authority in the general government. Professor Fisher urges upon the life insurance companies the importance of efforts on the part of the companies to promote the public health and thereby to diminish the risks to life of the insured. To this end he proposes that they should contribute to the support of the public health authorities in the enforcement of sanitary measures. The money which the life insurance companies would invest in life saving would not be allocated to hospitals or sanatoriums but in the education of the public, and especially the policyholders, in health matters, and the joining in every legitimate way to improve the public health offices and services in the municipalities, States, and the Federal Government.

Measures for Securing Greater Safety at Sea.

The recent disaster to the steamship *Republic* has awakened great interest in regard to safety devices on ships devoted to carrying passengers. The most important of these movements for improving the steamship service has been taken by the President in a message to Congress. He calls attention to the conclusive demonstration of the great value of radio-telegraphy ("wireless telegraphy") as an instrumentality for the preservation of life at sea, and refers to the fact that the Government has established a series of shore stations along the Atlantic, Gulf, and Pacific coasts and even our distant insular territories and Alaska, all of which are equipped for receiving and transmitting messages by any of the systems of wireless telegraphy now in general use. But he deems it important that Congress shall enact a law requiring, within reasonable limitations, that all ocean-going steamships carrying considerable numbers of passengers on routes where wireless installations would be useful should be required to carry efficient radio-telegraphic installations and competent operators. In response to this suggestion Congress has under consideration a measure requiring all seagoing vessels carrying 50 or more passengers to be equipped with apparatus for wireless telegraphy.

The Serum Treatment of Cerebro-spinal Meningitis.

The results of treatment of cerebro-spinal meningitis by the serum of the Rockefeller Institute are more and more favourable, according to the reports of that institute. Of course, it is useful only in cases due to the meningococcus. During the epidemic of 1905 the Board of Health reported 2700 cases with a mortality of 73·5 per cent. The following results followed the use of the serum: 1. As to age, of 59 patients under two years of age treated with the meningococcus serum, 34 recovered and 25 died, a mortality of 42·4 per cent.; in 88 cases between the ages of two and five the mortality was 28·4 per cent.; in 104 between the ages of five and ten years the mortality was 15·4 per cent.; in 149 between 10 and 20 years the mortality was 27·5 per cent.; and in 123 patients aged 20 years and over the mortality was 39 percent. 2. As to time of injection, of those under two years when the injection was made within the first three days the mortality was 9 per cent.; of those from two to five years old

the mortality was 22·8 per cent.; of those between the ages from five to ten the mortality was 12·3; of those between 10 and 20 the mortality was 24 per cent.; and of those over 20 the mortality was 44·5 per cent. Those injected from the fourth to the seventh day showed a mortality of 21·1 per cent. for those under two years; 32·5 per cent. for those between two and five years; 16·2 per cent. for those between five and ten years; 24 per cent. for those from 10 to 20 years; and 37 per cent. for those 20 years and over. Of those injected after the seventh day the mortality was 71·4 per cent. for those under two years of age; 27 per cent. for those from two to five years; 22 per cent. for those from five to ten years; 36·6 per cent. for those from 10 to 20 years; and 36·6 per cent. for those 20 years and over.

Feb. 19th.

Obituary.

DAVID JAMES HAMILTON, M.B. EDIN., F.R.C.S. EDIN., LL.D. EDIN., F.R.S.

IN the death of Dr. D. J. Hamilton, Emeritus Professor of Pathology in the University of Aberdeen, on Feb. 19th, the medical world, both at home and abroad, will deplore the loss of a savant of the first rank, a teacher of pathology of European reputation, and a man whose sterling and outstanding personality was as well known as were his scientific achievements. Born in 1849 in Falkirk, where he received his early education, he went to Edinburgh in 1866 and studied medicine firstly in the Royal College of Surgeons and afterwards in the University, obtaining the qualifications of both bodies. As an undergraduate he had a distinguished career, and when Sir Henry Littlejohn was appointed lecturer in the Royal College of Surgeons it is of interest to note that his first medallist was D. J. Hamilton. It was Sanders, however—whose most distinguished pupil he later became—who first kindled in Hamilton an interest in the science of pathology, to which his life was dedicated. After graduation he acted as resident surgeon to the Edinburgh Royal Infirmary, and subsequently held the post of resident medical officer of the Chalmers Hospital. He afterwards became resident medical officer to Liverpool Northern Hospital, an office which he filled for two years and during which time the pathological department of the hospital was under his charge. In open competition he then gained the Triennial Astley Cooper Prize of £300 for researches on the diseases and injuries of the spinal cord. By means of this award he was enabled to visit the continental schools, where he spent two years, chiefly at Munich, Strasburg, Paris, and Vienna. At the last-named school he came under the teaching of Rudolf Virchow, the founder of cellular pathology, whose views greatly influenced his later work. On his return he was appointed administrator of pathology in the University of Edinburgh and pathologist to the Edinburgh Royal Infirmary and Royal Hospital for Sick Children. In 1882 he was appointed to the chair of pathology, which had just been founded by Sir Erasmus Wilson in the University of Aberdeen. It was here that Professor Hamilton carried out his life's work and founded a school of pathology for which the University of Aberdeen is now widely famous. He early instituted a system of teaching this branch of medical science which is unrivalled in any other university in the kingdom. On alternate days he taught the theory and the practice of pathology, and further no student received a certificate of proficiency who had not conducted at least one necropsy under the personal supervision of Professor Hamilton.

As a pathologist Professor Hamilton had a European reputation and did more than any other in this kingdom to place pathology on a basis of systematised reason and convinced knowledge. His monumental work, "A Text-book of Pathology," was the standard work in the English language until Ziegler's German work was translated into English by Sir Donald MacAlister. Professor Hamilton early took an interest in the diseases of animals in which he always maintained there was a vast field for experimental research. The work which he published in recent years on Braxy in the Highland and Agricultural Society's Transactions and also as a Government report was the result of many years of patient investigation. Very long before he published his discoveries he was in the habit of spending his vacations in those parts of the Highlands where diseases of sheep existed, and on the news of an animal dying from braxy he would take to the hill with the shepherds. At last, after patient toil and perseverance, he was able to demonstrate the bacillary nature of braxy and "louping ill" (ataxia paralytica), which discoveries, along with his method of immunising animals against these diseases, should be the means, if they be adopted, of saving this country a quarter of a million sterling per annum. Another question in which he was extremely interested was the relation of bovine to human tuberculosis. At a time when many good pathologists accepted Koch's dictum that the two diseases were entirely separate Professor Hamilton from his own observations was led to believe that the two were intimately related, which is now the dominant view in Europe and America. In 1900 he delivered an address before the Edinburgh Medico-Chirurgical Society on Heredity in Disease,[1] in the course of which he gave a masterly exposition of his view as to the origin of a predisposition to tuberculosis.

It may be that in his lifetime Professor Hamilton's work did not receive all the recognition which it deserved. As it was honours came to him but late in life. For one thing he was not the man to approach the powers that be in his own interest and he was the last man to proclaim either his own ability or his scientific achievements in the market-place. He was an LL.D. of the University of Edinburgh, and two years ago was elected a Fellow of the Royal Society of London. It was as a teacher that Professor Hamilton was best known to his students, in whom he took a deep and personal interest. As a lecturer he had a clear incisive style which, combined with great command of language, made him an ideal teacher. He could put life into the driest theory and throw light into the most obscure views on immunity. Moreover, he was enough of an orator to know the value of a peroration, and now and then when enunciating some great principle, or hunting a heresy to the last ditch, he would take his stand at the end of the rostrum and hold the class spellbound. The name of Rudolf Virchow he never mentioned without a tribute—"Theories will come and go, our views of things will change, as they must change in a science not 70 years old, but the work of Virchow—the pathology of the cell—will endure for all ages to come." It was at examination times that the extraordinary interest which Professor Hamilton took in his students was manifest. If his men were doing badly, and the percentage of failures was higher than usual, so far from attaching the blame to the want of industry on the part of those concerned, he would walk his study half the night, searching his notes to see wherein he himself had failed in imparting instruction. That his wife's health in recent years did not permit them to show as much hospitality to his students as had been their wont was a source of deep regret to him and to her. Mrs. Hamilton died in June last and shortly after this Professor Hamilton resigned the chair which he had held for 27 years.

Professor Hamilton had other sides. He was a painter of no mean ability and the museum specimens in Aberdeen will furnish a lasting memorial of this. Further, when he drew in coloured chalks on his white "blackboards" he produced work as accurate as that of the coloured plates in text-books. One incident in his life may here be recalled. He had a laboratory attendant whom he instructed in the art of colouring specimens, and he was so struck by the lad's aptitude that he sent him to a master for regular lessons in drawing and painting, which were not without their results. The whilom laboratory attendant became a painter of great promise, whose pictures were hung on the line in Edinburgh and whose career only came to an untimely end when he perished in a storm at sea on board a ship bound for Australia. In music also Professor Hamilton was an enthusiast, and the musical Sunday afternoons at 35, Queen's-road, where all creeds met, were once a pleasant feature of Aberdeen society.

A man of great heart and ability Professor Hamilton, unlike the Church at Corinth, did not suffer fools gladly, and there were times when he did not hesitate to express his feelings with considerable vehemence. Yet he never bore malice, and if to-day he stormed at an assistant or student for some fault none would have been more surprised or grieved than Professor Hamilton if they had not appeared smiling on the morrow. As for cynicism or sarcasm, he never used them, for they had absolutely no place in his nature. To his old

[1] THE LANCET, March 24th, 1900, p. 855.

students his death is the loss of a friend, who influenced their lives for the better, and their minds go back to that grey sea-girt city, and across the years they see him again, as he stood at the end of the rostrum, a sturdy, kindly man, gazing across his spectacles as he said good-bye to another fleeting generation in a voice that was pleasant to hear: "And now, you men and women, you will soon be starting out in life for yourselves, and you will hear many things that are said of men and of books, but I would only say to you—prove all things, use your senses and the common sense that God has given you." In all truth, to the memory of David James Hamilton do the words of Celsus apply as they applied to the Father of Medicine—

"Vir, et arte et facundia insignis."

The funeral took place on Monday, Feb. 22nd, from the Mitchell Hall, Marischal College, to Allenvale Cemetery, and was largely attended by representatives of the city and University. The procession was headed by the two sacrists carrying the College maces draped in black crape, while the mourners followed in the following order: Students (four deep), members of the General Council, University assistants, lecturers, University officials, members of the Senatus, members of the University Court, coffin, chief mourners, other friends. The University flag was at half-mast, and as the funeral procession left the College the muffled bell was tolled.

JOHN FRANCIS TUOHY, M.D., M.CH. R.U.I.,

LIEUTENANT-COLONEL, I.M.S. (RETIRED).

THE death of Dr. John Francis Tuohy occurred quite unexpectedly at his residence, Brunswick-square, Hove, on Feb. 22nd. He was the fourth son of the late Mr. Patrick Tuohy of Cork, and was in the prime of life, being only in his fifty-fourth year. He received his professional training in Ireland and took the M.D. degree with honours at the Royal University in 1878. He became a Licentiate in Midwifery in the same year, Master of Surgery in 1879, and Master of Obstetrics in 1899. Dr. Tuohy had a distinguished career in the Indian Medical Service. He served as physician on the staff of the Lieutenant-Governor for the North-West Province and saw a good deal of fighting in the Afghan campaign, receiving the medal and clasp. He practised as a civil surgeon at Agra and his skill was of great value during plague periods. On several occasions he received the thanks of the North-West Province Government. Dr. Tuohy left the service with the rank of lieutenant-colonel and, having studied for some time at Vienna, went to reside at Hove about nine years ago and quickly built up a practice. The remains of the deceased were interred on Feb. 25th in Hove Cemetery and this was preceded by a requiem mass celebrated at the Church of the Sacred Heart.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—The following members of the teaching staff of the Medical Faculty of the University of Messina are now known to have perished in the earthquake: Dr. Antonio Zincone, professor of anatomy; Dr. Gaspare D'Urso, professor of clinical surgery; Dr. Giovanni Melle, professor of dermatology; Dr. Agatino Barbera, extraordinary professor of experimental physiology; Dr. Giuseppe Betagh, Dr. Antonio Cambra, and Dr. Pietro Fiorentini, *privat-docenten* of external pathology; Dr. Lorenzo Mandalari, *privat-docent* of psychiatry; Dr. Carmelo Calderone, *privat-docent* of dermatology; Dr. Domenico Crisali, *privat-docent* of pædiatry; Dr. Francesco Ponzio, *privat-docent* of forensic medicine; and Dr. Baldassare Testa, *privat-docent* of materia medica and experimental pharmacology.—Dr. Rybalkin, *privat-docent* of neurology in the Military Medico-Chirurgical Academy, St. Petersburg.—Dr. Lürig, sanitary councillor of Alfeld, at the advanced age of 96 years, who only retired from practice a very few years ago.

HEALTH OF TAUNTON.—The medical officer of health of Taunton (Dr. H. J. Alford) in his annual report for 1908, which has been recently issued, states that on an estimated population of 22,096 the birth-rate for the year was 20·1 per 1000. The death-rate, excluding non-residents, was 15·2 per 1000; including non-residents, 17·4. The zymotic death-rate was 0·5 and the infantile mortality 132·5 per 1000 births.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Mr. R. C. Punnett, M.A., of Gonville and Caius College, has been appointed superintendent of the Museum of Zoology.—Sir Victor Horsley has been appointed Linacre lecturer at St. John's College. The Linacre lecture will be delivered on May 6th, the subject being "The Motor Area of the Brain."—Owing to the Darwin celebration the date of the Third M.B. Examination, Part II., has been altered to Tuesday, June 8th, from Tuesday, June 15th, in next Easter term.—The following degree was conferred on Feb. 25th:—

M.B., B.C.—F. A. Juler, Trinity.

UNIVERSITY OF BRUSSELS.—The following British candidates obtained the M.D. Brux. degree at the last examination:—

B. J. Macaulay, Eastbourne; H. F. Briggs, Eastbourne; A. R. Rendle, Harrow; and J. J. Bradley, colonial medical officer, Seychelles.

TRINITY COLLEGE, DUBLIN.—In Part I. of the Final Examination in Medicine held recently the following candidates were successful:—

John H. Woodroffe, Marius A. Diemont, Hilgard Müller, Arnold K. Henry, Arthur C. Hallowes, Beatrice M. Hamilton, Charles H. Denham, Richard H. Mathews, Perceval G. Leeman, John W. Flood, and John B. Burgess.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* The following gentlemen have been granted the title of Professor: Dr. Karl Kisskalt and Dr. Claus Schilling of the Institute of Hygiene, and Dr. Otto Lentz. For several years past the number of medical students proceeding to the doctor's degree has been steadily falling, the reason generally assigned being that the fees in Berlin are much higher than in other universities, so that many men who have carried on most of their studies in Berlin prefer to migrate to some less expensive university when they are about to take their doctor's degree. Of course, it is possible that stringency of another kind also operates in driving men to graduate elsewhere. The authorities have, however, now determined to lower the fees from 440 marks to 300 marks for those who have already taken the State qualification of *Arzt* and who consequently are not required to pass an exhaustive oral examination or *rigorosum*. When a candidate is not already *Arzt*, which generally means when he is a foreigner, he must pass this and pay a higher fee, which is now to be 500 marks instead of 600 marks, as it has hitherto been. The procedure will be simplified, the ceremony taking place in the Senate chamber instead of in the *Aula*. The candidate will still have to appear in black clothes but a dress coat will not be needed.—*Breslau:* Dr. Biberfeld, *privat-docent* of Pharmacology, has been granted the title of Professor. Dr. August Most has been recognised as *privat-docent* of Surgery.—*Burlington (University of Vermont):* Dr. Walter S. Reynolds has been appointed Professor of Syphiligraphy.—*Cincinnati (Miami Medical College):* Dr. Mark A. Brown has been appointed Professor of Medicine.—*Greifswald:* Dr. Peter Esch has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Heidelberg:* The new Institute for the investigation of radium is to be installed in the recently erected building of the Physical Institute, with which it will be in charge of Professor Lennard, Professor of Physics in the Philosophical Faculty, whose researches on the physics of the ether are well known. The main object of the new establishment, of which the official name is the Physico-Radiological Institute, is the solution of various biological and therapeutical questions, and close relations will be maintained between it and the different clinics connected with the university.—*Melbourne:* Dr. C. Maudsley has been appointed Lecturer on Medicine.—*Michigan (Ann Arbor University):* Dr. Albion W. Hewlett, Assistant Professor in the Cooper Medical College, San Francisco, has been appointed Professor of Medicine, in succession to Dr. George Dock.—*Odessa:* Dr. Ignatofski of St. Petersburg has been appointed Extraordinary Professor of Medicine.—*Rome:* Dr. Giuseppe Panegrossi has been recognised as *privat-docent* of Neurology.—*St. Petersburg (Military Medical Academy):* Dr. E. A. Granstrem has been recognised as *privat-docent* of Medicine.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A meeting of this association will be held at 11, Chandos-street, Cavendish-square, London, W., on Wednesday, March 10th, at 3.30 o'clock. Dr. William Collier (Oxford) will open a discussion on School Athletics, with an address on the question: "Ought School Boys to be Allowed to Compete in Flat and Cross Country Races of more than one mile in length?"

HEALTH OF THE BIDEFORD (DEVON) RURAL DISTRICT.—The medical officer of health of the Bideford rural district (Dr. W. Bethune) in his annual report for 1908 states that the birth-rate during the year was 19·06. The death-rate was 11·25 per 1000. One death occurred from zymotic disease. The infant mortality rate was 98·3 per 1000 births. Six deaths occurred from pulmonary phthisis and six deaths were due to cancer.

ROYAL SANITARY INSTITUTE.—A provincial sessional meeting will be held at Sheffield on March 12th and 13th next. The meeting on Friday, March 12th, will be held in the University, Sheffield, at 7.30 P.M., when a discussion will take place on "Medical Inspection: its Relationship to the Home Life of the Children." The discussion will be opened by Dr. Ralph P. Williams, school medical officer and assistant medical officer of health of Sheffield. It is hoped that the following will take part in the discussion:—Dr. Philip Boobbyer, Professor J. Spottiswoode Cameron, Dr. Ralph H. Crowley, Dr. J. R. Kaye, Dr. J. Kerr, and Dr. H. Scurfield. General discussion is invited. The chair will be taken at 7.30 P.M. by Colonel J. Lane Notter, R.A.M.C., deputy chairman of the council of the Institute. Tickets for admission of visitors may be had on application to Dr. Ralph P. Williams, Education Offices, Sheffield, who is kindly acting as the local honorary secretary of the meeting, and of Mr. E. White Wallis, secretary.

THE INSTITUTE OF CHEMISTRY.—The thirty-first annual general meeting of the Institute of Chemistry was held at 30, Bloomsbury-square, London, W.C., on March 1st, Professor Percy F. Frankland, the retiring President, being in the chair. The President submitted the report of the council, directing the attention of the Fellows and Associates to the principal items in the work of the Institute, to which he referred in more detail subsequently in his address. Dr. Frank Clowes, in seconding, said that he had attended many annual meetings and it was a great pleasure to him to hear of the continued progress of the Institute in all its work and in new work. When he was a teacher he always advocated his students to work for the qualification of the Institute, and now that he was engaged as a professional chemist he was glad to see that his authorities of the London County Council fully recognised the value of A.I.C. and F.I.C. The report was received and adopted. Professor Frankland, in the course of his address, said he was very thankful that, through good fortune and the help of the councils and officers with whom he had been associated, he was able to hand over the affairs of the Institute in as sound and healthy a condition as when he took them over from his predecessor three years ago. He would emphasise the fact that whilst the well-being of the community was greatly promoted by the services of competent chemists, the mischief which could be wrought by the ill-trained and incompetent was incalculable. It was one of the chief duties of the Institute to maintain a high level of training for professional chemists by demanding of candidates for its membership evidence of thorough training, and by requiring them to pass searching examinations. The President, after dealing with the suggestion that more research work should be expected of candidates for the Fellowship, referred to the work of the various committees, indicating how the Institute had endeavoured to promote the interests of its members. He made special reference to protests made by the council against professional chemists being invited to apply for appointments by tender, and appealed to the Fellows and Associates to assist in the endeavour to crush this sinister development. The Institute had lately taken steps to establish an Appointments Register and had already succeeded in placing a number of members in good positions; steps would be taken to make manufacturers and other employers aware of the existence of this register, which promised to be most useful.

A GLOUCESTERSHIRE CENTENARIAN.—Mr. John Rogers of Tewkesbury died last week in his 101st year.

INFANTILE MORTALITY OF BATH.—The infantile mortality for Bath during 1908 was 19 per 1000 births, being the lowest ever recorded.

WEST LONDON POST-GRADUATE COLLEGE.—The annual conversazione will be held in the hospital on Wednesday, March 24th, at 8.30 P.M. All past and present members of the college are invited, and any medical man who would like to be present will have a card of invitation sent on applying at the hospital to the Dean, Mr. L. A. Bidwell, West London Hospital, Hammersmith.

HEALTH OF LYNTON AND LYNMOUTH.—Dr. H. J. Edwards, medical officer of health of the Lynton urban district, in his annual report for 1908, which has been recently issued, alludes to the healthiness of the Lynton and Lynmouth district. The birth-rate for the year was 15·42 per 1000. The death-rate was 11·42 per 1000; deducting the deaths of non-residents, the rate would be 8·57 per 1000, almost the lowest on record. Only one case of infectious disease had been notified.

THE LONDON OPHTHALMIC EXHIBITION, 1909.—An exhibition will be held at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on March 12th and 13th, from 12 noon to 10 P.M. each day. The object of the exhibition is to bring under the notice of medical men, and especially of ophthalmic surgeons, the latest models and improvements that have been invented during the year. A number of optical firms of repute are showing the latest optical and ophthalmological appliances; others are showing surgical instruments, the latest models of eye instruments, together with dressings, drugs, new models of sterilisation, microscopic appliances, books, and so on. It is hoped that certain tricolour reproductions of eye conditions may also be shown. Every endeavour will be made to make the exhibition interesting to those attending. Special invitations will be issued to all members of the Ophthalmological Society and to a large number of medical men, and to those interested in ophthalmic work. Tea, coffee, and light refreshments will be served on the Saturday afternoon from 4 to 5.30 P.M. Tickets will be sent free on application to the Organising Secretary, Mr. Ernest Schofield, 11, Chandos-street, Cavendish-square, London, W.

THE CREMATION SOCIETY OF ENGLAND.—The annual general meeting of this society was held at its offices, 324, Regent-street, on Feb. 24th, Sir Charles Cameron, Bart., M.D. Dub., being in the chair. The council and officers were re-elected for the current year and seven new vice-presidents were elected, amongst whom were Sir G. Anderson Critchett and Sir John Tweedy. The honorary secretary read the council's report and statement of accounts for the year 1908, and in moving their adoption the chairman congratulated the society upon a large increase of life members who by their payment of 5 guineas are entitled to cremation after death at any of the 13 crematoriums in Great Britain. The number of cremations in these institutions in 1908 was 795, a figure more than double that for ten years ago. Sir Charles Cameron pointed out that in Germany the number of cremations performed since 1878 has been about 20,000, but that only 3111 of these took place in the first 20 years, and that not until 1902 was the annual number reached that has now been attained in England. In 1908 and 1907 the German cremations had exceeded those of the previous years by 900 and 1073 respectively, and religious prejudices against the practice were gradually giving way. Sir Charles Cameron, after alluding to the satisfactory financial position of the society, in conclusion dwelt on its work in procuring a Parliamentary Committee which brought to light the "scandalous laxity and inefficiency" of the present state of death certification for earth burial, and on the advantages to the State which accrue from the precautions taken in death certification previous to cremation. Sir Herbert Thompson seconded the adoption of the report and balance sheet and the motion was carried unanimously.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Debate on the Address.

THE debate on the Address in the House of Commons was finished on Thursday, Feb. 25th. Most of the time of the House until Easter will probably be allocated to financial business, but the Government intends to press on the Housing and Town Planning Bill. Mr. BURNS has expressed the hope that this measure will pass its various stages before Easter, but this is regarded as a most sanguine estimate.

East India (Contagious Diseases) Return.

The East India (Contagious Diseases) Return, which was ordered on the motion of Mr. STUART in June, 1908, has now been presented to the House of Commons. It has not yet been issued in printed form.

Industrial Poisoning.

Preliminary tables of cases of industrial poisoning, fatal and non-fatal accidents, and dangerous occurrences in factories and workshops during the year 1908 have been issued. The figures are subject to correction. The total number of cases of industrial poisoning for the year is placed at 727, of which 40 resulted fatally. In 1907 there were 653 cases and 40 deaths. The tables give the precise statistics with respect to different industries during the past year. Against lead poisoning are placed 646 cases and 32 deaths. Ten cases are set against mercury poisoning and one against phosphorus poisoning. Arsenic poisoning is responsible for 23 cases and one death, and anthrax for 47 cases and seven deaths.

The Royal Commission on Whisky.

It is expected that the report of the Royal Commission on Whisky and other potable spirits will be in the hands of Members of Parliament before the end of the session. Nearly all the evidence which the Commissioners desire to call has now been taken. What remains to be heard will, it is anticipated, occupy about a dozen sittings. Witnesses representing the Cognac industry will state their views to the Commission at an early date and they will be followed by officials from the Inland Revenue and Customs. Members of Parliament who are taking an interest in the proceedings of the Commission anticipate that Lord JAMES of Hereford and his fellow Commissioners will thereafter lose little time in issuing their report. The time occupied in its preparation will doubtless be less than it would have been if the Commissioners had not in their interim report formulated to some extent their general views on the subject of whisky.

Poor-law Reform and Local Taxation.

In the lobby of the House of Commons no expectation is entertained that the Government will this year introduce a measure dealing broadly and comprehensively with the matters dealt with in the report of the Royal Commission on the Poor-law. Subject to political contingencies, it is not unlikely that a Bill on the subject will find a prominent place in the Government's legislative programme next year. That the Government contemplates legislation has long been plain. Indeed, Mr. LLOYD GEORGE in the debate on the local taxation amendment to the Address, spoke of the Government considering and placing before the House of Commons its proposals with regard to the Poor-law. The references to this subject in the debate showed how closely it is connected with the vexed question of local finance. Considerations of the expenditure of local authorities must inevitably play a large part in the discussion of any measure bearing on the Poor-law.

The Medical Inspection of School Children.

Several references to the cost of the medical inspection of school children were made by speakers in the debate on local taxation. The merits of this recent departure in educational administration were not under direct review, but mention was made of it as one of the heads on which the expenditure of local authorities was increasing. Viscount HELMSLEY, for instance, mentioned that the cost of medical inspection in the North Riding of Yorkshire would be £1500 a year. Mr. HICKS-BEACH said that he had been told that in Gloucestershire the expenditure on the inspection of school children cost a sum equal to a penny rate. Mr. HENRY C. GOOCH pointed out that in London expenses were likely to mount up not only in the actual inspection of the children but in the tabulation of statistics. He made a calculation that no less than 300,000 children in elementary schools in London would have to be inspected every year. These three Members represent constituencies widely apart from each other.

Infantile Mortality.

Most sympathetic replies were given by Mr. ASQUITH, Mr. RUNCIMAN, and Mr. BURNS to a deputation from the National Conference on Infantile Mortality which was received in the Prime Minister's Room at the House of Commons on Friday, Feb. 26th. Amongst the members of the deputation were Alderman BROADBENT, Huddersfield; Councillor W. FLEMING ANDERSON, Glasgow; Dr. G. M. CULLEN, Edinburgh; Dr. A. K. CHALMERS, medical officer of health of Glasgow; Miss ALICE RAVENHILL, London; Dr. J. SPOTTISWOODE CAMERON, medical officer of health of Leeds; Dr. H. HANDFORD, county medical officer of health of Nottingham; Dr. E. W. HOPE, medical officer of health of Liverpool; Dr. J. R. KAYE, medical officer of health of the West Riding; Dr. G. F. MCCLEARY, medical officer of health of Hampstead; Dr. S. G. H. MOORE, medical officer of health of Huddersfield; Dr. G. REID, county medical officer of health of Stafford; Dr. J. ROBERTSON, medical officer of health of Birmingham; and Mr. WILLIAM JONES, secretary to the National Conference on Infant Mortality. The deputation was accompanied by the Right Hon. ALFRED LYTTELTON, M.P., who introduced it to the Prime Minister, and also by Mr. SHERWELL, M.P., and Mr. VERNEY, M.P., Mr. HERBERT SAMUEL, Under Secretary to the Home Department, and Mr. MASTERMAN, the Parliamentary Secretary to the Local Government Board. The genera. scope of the deputation's aims was explained by Councillor ANDERSON. Each of them was embodied in a resolution of the conference. There were three of them. The first was the necessity of teaching girls domestic hygiene. The second point was that infants' foods ought to be labelled with their constituent parts and should bear a certificate from a Government analyst guaranteeing that they were free from injurious substances; whilst the third was a recommendation that the Midwives Act should be extended to Scotland. A statement made by Councillor ANDERSON as to infantile mortality in Glasgow evidently made a deep impression on the Prime Minister and his colleagues. He said that since 1875 the death-rate in Glasgow had been halved while the population had doubled, but during that period the infant death-rate had remained stationary. In many English towns it had increased. One of the most potent causes of infantile mortality was improper feeding and he said that it was generally agreed that for every breast-fed baby that died 15 bottle-fed babies did not survive. The various points dealt with by Councillor ANDERSON were taken up by other speakers. Miss RAVENHILL and Alderman BROADBENT urged the training of girls for the duties of motherhood. Dr. SPOTTISWOODE CAMERON strongly insisted that the constituents of infant foods should be stated on the label and that there should be a guarantee from a Government analyst that they did not contain borax or any other injurious substance. In this manner infant life would be largely protected. Dr. MCCLEARY briefly enforced the contention of Dr. SPOTTISWOODE CAMERON. Dr. CHALMERS addressed the Prime Minister on the desirability of extending the Midwives Act of 1902 to Scotland. He pointed out that certain modifications of machinery as to the constitution of the Central Midwives Board would be necessary if Scotland were to be brought under the operation of the Act. Dr. CHALMERS also gave some significant figures as to the incidence of puerperal fever in Glasgow. In the case of medically attended confinements its ratio was a little over 3 per 1000, but in non-medically attended ones it rose to more than 7 per 1000. Dr. HOPE added a very few words in support of the speech of Dr. CHALMERS.

The PRIME MINISTER made a brief reply to the deputation, but its tone as well as its phraseology was in a marked manner sympathetic. The concluding sentences of his speech are worth quoting *in extenso*. "While we have had a general improvement in sanitary conditions," said the PRIME MINISTER, "this particular evil of infantile mortality remains substantially unchanged. I think we must agree that the causes are those which you have communicated to me to-day. First, there is the ignorance of the mother; secondly, there is the not infrequently unskilful treatment from unqualified or partially qualified practitioners at and after the birth of the child; and thirdly, the almost grotesquely bad forms of nutrition which the unfortunate child which survives receives. There you have three causes coöperating to produce two results which are almost equally bad. First, there is the waste of child life which has been connected with the appalling rate of mortality of children under 12 months; and, in the next place, there is the growth to womanhood and manhood of children who at the most critical time of their existence, considering the conditions under which their earlier years are spent, never have a chance of developing into the raw material for good workmen and good citizens. That is substantially the case you present us to-day. Speaking now generally, I am heartily in sympathy with you and any practical form of legislation which may be suggested will receive from the Government their most sympathetic consideration."

Mr. RUNCIMAN, the President of the Board of Education, at the request of Mr. ASQUITH, dealt with the education of girls in domestic hygiene. The right honourable gentleman mentioned that his department was attempting, both in the elementary and secondary schools, to give more attention to the teaching of domestic subjects, and he thought more might be done in this direction in secondary schools. In the case of the elementary schools the department was met with difficulties not only of expense but of age. Girls left school very young and during the time of their school life it was very difficult to cram all necessary subjects into their short curriculum. He expressed the hope that in time the age of leaving school would be increased, and then it would be possible to extend the curriculum. The Board of Education had the advantage of the services of Dr. G. Newman in these matters, although his hands were very full at present with the medical inspection of school children. Mr. RUNCIMAN pointed out the difficulty of obtaining teachers competent to teach domestic hygiene, but as the subject had been receiving increased attention at the training colleges he hoped to extend the tuition on it in elementary schools. He thought that in

evening schools in some parts of England some impression had been made on girls between 14 and 16 years of age. "Much remains to be done," added the President of the Board of Education, "and this and other problems are having our most serious attention."

In addressing the deputation, Mr. BURNS, the President of the Local Government Board, made a passing reference to the work done by medical men in the service of his department. He congratulated the deputation on the work accomplished by the National Conference on Infantile Mortality. Since that organisation commenced working this remarkable fact had been witnessed—in 1908 15,000 more children's lives had been saved to the State. The death-rate in infancy had gone down to 121 where formerly it was about 140, while the death-rate of children from birth to five years of age had also dropped. Mr. BURNS spoke of the Notification of Births Act as being a singular success. Of the larger local authorities, 127 had complied with its provisions, and thus proper treatment had often become available to mother and child. The President of the Local Government Board then took up the question of food. In view of the Regulations as to Food Act, he had set up a special food sub-department, and the large imports of food from abroad were claiming attention at present. The department had not yet embarked upon the question of babies' food; but he had remitted to the two skilled medical men who were at the head of that special department the question of the character, quality, and constituent elements of babies' food. He would do what he could to secure the aims of the deputation in this respect, but one difficulty stood in the way. It was asked that all such food should be certified by a Government analyst. However, the difficulty was this. Certain food might be good for a child of the age of 12 months to five years; but the same food might be poison to a child between birth and five or six months. He hoped that medical men would find a way out of the difficulty. They now found that they were getting more help in the matter of infantile mortality than they had hoped for from the notification of tuberculosis. In dealing with other matters bearing on infantile mortality Mr. BURNS mentioned housing. Bad and insanitary housing conduced to a high death-rate amongst infants, and the right honourable gentleman trusted that it would be combated by the Housing and Town Planning Bill when it became law. He hoped that this Bill would get through before Easter. The contemplated Milk Bill, also, he regarded as another beneficial measure.

No representative of the Scottish Office was present and no indication was thus given to the deputation with regard to the Government's attitude on the extension of the Midwives Act to Scotland. The proceedings occupied an hour, and in thanking the Prime Minister and his colleagues for receiving the deputation Provost SMITH (Leith) said that the replies given were satisfactory.

New Bills.

Several new Bills were introduced in the House of Commons on Monday, March 1st, and on the following day. Mr. GEORGE GREENWOOD presented a measure "to classify murders and to amend the law with regard to suicide and infanticide," and also a Bill "to amend the law relating to the registration of deaths and to burials." Sir WILLIAM COLLINS introduced a Bill "to provide for superannuation allowances to officers and servants employed in public asylums for the insane in Great Britain and Ireland, and to make other relative provisions." Mr. MUNRO FERGUSON presented a Bill "to regulate the registration of nurses." All these measures received a first reading.

The Army Medical Corps of the Territorial Force.

Some figures with regard to the Army Medical Corps of the Territorial Force are given in a return just presented to Parliament, but they are not quite up to date, because they were taken on Oct. 1st, 1908. In this branch of the service the percentage of strength to the establishment was less than in any other arm, being only 53 per cent. A large number of the units were new and the organisation was also an entirely new creation. The general hospitals and sanitary companies had at the date in question only obtained about 31 per cent. of their establishment. On Oct. 1st the Territorial establishment was 1488 officers and 13,919 men, but the strength was only 887 officers and 7410 men.

The Health of the Army.

In the memorandum of the Secretary of State for War relating to the Army Estimates for 1909-10, the results on the health of the army of the reforms in the Royal Army Medical Corps which were instituted in 1902 are touched upon. A comparison is made in tabular form with regard to hospital admission-rates, death-rates, rates of invaliding, and constantly sick-rates of the first and last years of the decennial period 1898-1907 in India, in the United Kingdom, and the Colonies; this table is published elsewhere (see p. 715) In India in 1898 there were 39 invalids sent home per 1000 and in 1907 there were 25 per 1000. In the colonies there were 44 invalids sent home per 1000 in 1898, and in 1907 there were 19 per 1000. The fall in the admission and constantly sick rates is not attributed wholly to diminished incidence of disease. It is partly due to an administrative improvement by which the men with slight ailments are not removed to hospital but are treated in barracks as out-patients. The lowered death and invaliding rates, according to the memorandum, show the true effects of efforts at disease prevention. The results, as a whole, mean a reduction in the number of hospital beds necessary, less men maintained in peace to produce a given number fit for war, smaller annual drafts to be sent out by the home units, and, in fact, an all-round saving in the cost of the army.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 24TH.

The Education of Afflicted Children in Ireland.

In answer to Mr. FRENCH, Mr. BIRRELL (Chief Secretary to the Lord Lieutenant of Ireland) said: I should be very glad to introduce a Bill on the same subject as the Irish Education (Afflicted Children) Bill which was introduced by my predecessor two years ago if I had any assurance that it would meet with general approval.

THURSDAY, FEB. 25TH.

The Departmental Committee on Lead Poisoning.

Sir FREDERICK BANBURY asked the Secretary of State for the Home Department whether a number of painful experiments had been and were being carried on on cats for the purpose of obtaining evidence to lay before the Departmental Committee on Lead Poisoning; and, if so, whether he would state under what certificates they had been performed.—Mr. GLADSTONE replied: Two licenses obtained certificates A and E last month to carry out experiments for this committee. One of these gentlemen who gave evidence before the committee in December, has held other certificates A and E since 1905, authorising experiments on cats in connexion with lead poisoning. The objects of the experiments include an inquiry into the channels of infection in chronic lead poisoning and the establishment of better methods of diagnosis—objects which I think the House will agree to be of great importance.

The Pensions of Officials of Asylums.

Mr. AUSTEN CHAMBERLAIN asked the President of the Local Government Board whether he proposed to introduce any legislation this session to provide for the establishment of pensions for the officials of Poor-law asylums on similar terms to those in force for other Poor-law officers.—Mr. BURNS answered: I do not contemplate proposing legislation with regard to pensions for the officers of county and borough lunatic asylums. These are, I presume, the asylums to which the right honourable gentleman refers. The visiting committees of these institutions are empowered to award pensions to their officers under Section 230 of the Lunacy Act, 1890. Any alteration in the law as to such pensions would not be a matter for me but for the Home Secretary.

Tuberculosis amongst Discharged Soldiers.

Mr. SUMMERBELL asked the Secretary of State for War whether he was aware that the Local Government Board had issued a general order to local authorities in England and Wales setting out that, whereas tuberculosis was an endemic disease and that form of the disease which was known as pulmonary tuberculosis was an infectious disease, new regulations were expedient with a view to preventing the spread of that disease; and, if so, could he state whether it was the intention of his department to act on such order in so far as the army was concerned, in view of the fact that some 350 men were discharged from the army each year suffering from this disease and without receiving any consideration from the War Office, and by so doing give effect to the recommendations made some time ago on this subject of a select committee appointed for the purpose.—Mr. HALDANE furnished the following written reply: If my honourable friend will kindly refer to the order in question he will see that the new regulations amount to instructions in regard to notifications to the medical officers of health of sanitary authorities, of cases of pulmonary tuberculosis occurring among inmates of Poor-law institutions and poor persons in receipt of relief from the poor rate. The cases occurring among men discharged from the army have been similarly notified in the past to these officers.

Inoculation for Plague.

Mr. LUPTON asked the Under Secretary of State for India whether officers commanding native regiments in India had any authority to compel the officers and men under their control to undergo the operation of revaccination or of inoculation for plague; and, if not, would he cause a notice to be circulated to forbid such practices.—Mr. BUCHANAN said, in reply: The Secretary of State is in communication with the Government of India on this subject, but is not in a position to answer the honourable member's question at present.

A Case of Vaccination.

Mr. LUPTON asked the President of the Local Government Board whether he was aware that Albert Shaw, of 114, Sutherland-road, Longton, about four months old, was vaccinated about Sept. 15th, 1908, by Dr. Allan; that the child became so ill that after three days Dr. Lefevre had to be called in; and that the child, after great suffering, died on Sept. 26th; whether this child was vaccinated with stuff supplied by the Local Government Board; and, if so, what steps he proposed to take to stop the distribution of poisonous vaccination matter.—Mr. BURNS replied: I have communicated with Dr. Allan and am informed by him that a child named Albert Edward Shaw, of 114, Sutherland-road, Longton, died on Sept. 26th last, the cause of death being stated in the death certificate as enteritis. Dr. Allan also informs me that he vaccinated with calf lymph supplied by the Local Government Board a child whose name was entered in the Birth Register as Morris Shaw, but who seems to be the child already referred to. The vaccination, however, took place on June 24th last and not about Sept. 15th as stated in the question. There does not appear to be any reason to connect the death from diarrhœa with the vaccination which took place more than 13 weeks previously.

MONDAY, MARCH 1ST.

The Medical Inspection of School Children and the Rates.

Mr. RAMSAY MACDONALD asked the President of the Board of Education whether his attention had been drawn to the dissatisfaction of local education authorities regarding the burden which adequate medical inspection of school children would put upon rates, and the failure of the Board of Education hitherto to give what the local authorities considered to be fair financial assistance for this purpose; and whether he could now say what the Board of Education proposed to do, or when he intended to make a statement on the subject.—Mr.

RUNCIMAN replied (by written answer): Many requests are constantly being made to me for increased grants in relief of local rates. Had either of the Education Bills of last session passed into law increased grants for educational purposes would have been made to local authorities. I am not in a position to make any statement at present but the Prime Minister and the Chancellor of the Exchequer have undertaken to receive a deputation on this subject on March 18th.

An Inquest in Wandsworth Prison.

Mr. COOPER asked the Secretary of State for the Home Department whether his attention had been directed to a report of an inquest held at Wandsworth Prison on a tramp named Henry Andrewes, who died in the prison infirmary from heart failure following pneumonia; whether he was aware that Andrewes had been turned out of the Croydon casual ward too ill to continue his journey and broke a window to get locked up to get medical treatment, and was sentenced by the Croydon magistrates to seven days' hard labour; whether he was aware that the medical officer of Wandsworth Prison stated at the inquest that he found Andrewes's condition on admission so bad that he placed him at once in the hospital; whether the Croydon police communicated the reason of Andrewes breaking the window to the magistrates; whether the police surgeon was called upon to advise upon Andrewes's condition before he was brought before the magistrates or after his conviction; and, if not, would he give the reason.—Mr. GLADSTONE furnished the following written answer: I have made inquiry into this case and am informed that Andrewes, having complained when in the casual ward at Croydon that he felt unwell, was examined by the medical officer of the Croydon workhouse, who pronounced him to be fit to leave and referred him to the relieving officer for an order if he wished to enter the workhouse. Upon this Andrewes broke one of the windows and was therefore charged by the workhouse authorities. He gave no reason for breaking the window and did not complain of illness either to the police or to the magistrates. Consequently there was no reason for the police to obtain medical advice. On admission to prison he was found to be so ill-nourished that the assistant medical officer put him in the infirmary instead of an ordinary cell, but no actual illness could be observed until a day later.

The Destruction of Rats.

Mr. COWAN asked the President of the Local Government Board whether he had received representations from the scientific committee of the Incorporated Society for the Destruction of Vermin and from other sources, urging immediate investigation as to whether the various bacteriological preparations now on the market for the destruction of rats were, or were likely to become, pathogenic to man; and what action the Board proposed to take in the matter.—Mr BURNS wrote in reply: I do not find that the committee of this society has made any such representations to me as are above referred to, but my attention has been drawn to the question whether some action should be taken with regard to various bacteriological preparations for the destruction of rats, with a view to preventing danger to man, and the subject is now receiving my consideration.

Dairies, Cowsheds, and Milkshops in Ireland.

Mr. DEVLIN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he could give any information with regard to the working of the new Order as to dairies, cowsheds, and milkshops in Ireland; whether any prosecutions had been undertaken against defaulters; and whether any improvement in the quality of the milk-supply had resulted.—Mr. BIRRELL (by written answer) replied: I am glad to be able to state that a large number of local authorities in Ireland have actively taken up the administration of the Dairies, Cowsheds, and Milkshops (Ireland) Order, 1908. In 69 districts veterinary surgeons have been appointed to act as inspecting officers, and in 42 further districts other inspecting officers have been appointed. The councils of some rural districts where the dairying industry is very extensively carried on have, however, refused to take any action respecting the Order, notwithstanding repeated representations from the Local Government Board. The Board is contemplating legal proceedings in the High Court against a few of the more important of these bodies with a view to compelling them to perform their duties. It rests with the local authorities to institute prosecutions for offences against the provisions of the Order, and no record of such prosecutions is furnished to, or kept by, the Local Government Board. The Board is aware, however, that in certain districts proceedings have been initiated for non-compliance with the requirements of the Order. No means exist for measuring variations in the quality of the public milk-supply of the country, but there is every reason to believe that the vigilance now being exercised by local authorities tends to secure a cleaner and more wholesome supply of milk.

Buildings and Engineering Works Bill.

Mr. HERBERT SAMUEL (Under Secretary for the Home Office) asked for leave to introduce a Bill to make better provision for the safety and health of persons employed in certain building operations and engineering works. He explained that the building trade was one of the most dangerous in the country and in it there were over 100 fatal accidents this year. The existing law was inadequate to enable the Home Secretary to make regulations for insuring safety in this trade, and the Bill was designed to confer further powers on him. Certain powers of inspection would then be given to the inspectors of local authorities. Persons employed in the building trade also suffered to a large extent from risk of accident, but certain classes of them were exposed to one of the most serious of industrial diseases—lead poisoning. It was usually thought that lead poisoning was almost entirely confined to potteries, manufactories of white lead and red lead, tinning, and other industries. That was not so, and the figures, although they were notoriously incomplete, showed that the number of fatal cases of lead poisoning amongst plumbers and painters engaged upon buildings was greater in number than in all those other industries put together, and, that lead poisoning was more prevalent in this trade than over the rest of the field of industry. It was obviously necessary that this prevalence should be stopped and regulations were necessary. The Bill also applied to men engaged on engineering works where it was very well known that the deaths from accidents were very excessive in number, especially in regard to deaths due to explosives. Further, this trade also in some of its branches had a preventable disease—compressed-air disease—peculiar to it, and it ought to be stopped by proper regulations, and it could be stopped if the Home Office had the power to make regulations touching this industry. In the past Home Office rules and regulations had been of immense value to the working population. In the mining industry the death-rate of the men was reduced in 20 years to two-thirds owing to regulations made under the Mines Regulation Act. In the potteries the number of cases of lead poisoning was reduced in three years by three-quarters owing to the adoption of effective practical rules. He assumed that the same results would follow if the House would extend to the Home Office the larger powers which he now asked to secure the safety and to protect the health of those engaged in this industry.

Leave having been granted, the Bill was introduced and read a first time.

Medical Relief and Old Age Pensions.

In the course of the debate on the Supplementary Estimate for Old Age Pensions several honourable Members asked the Chancellor of the Exchequer to explain to what extent medical relief was to be regarded as a disqualification for a pension.

Mr. LLOYD GEORGE stated that some of the pension officers had on this matter taken perhaps a sterner view of their duty than they were justified in taking by a liberal interpretation of the Act. He thought that after further experience had been gained, regulations might be issued which would make the practice plain not only to the pension officers but to the general public. He adhered to the statement that as regarded medical relief in a Poor-law infirmary the Local Government Board acted on the view that if a person suffering from disease or accident was removed to a Poor-law infirmary for relief or treatment it did not disqualify. It had been laid down that such relief as he received other than medical or surgical was merely incidental to his treatment. It was only in case he became a chronic inmate of the infirmary that disqualification would ensue.

TUESDAY, MARCH 2ND.

Indian Medical Services.

Dr. V. H. RUTHERFORD asked the Under Secretary of State for India whether, seeing that there were two separate medical services to attend to the British and Indian troops of the army in India, he would say whether fusion of these services took place in time of war; and whether, seeing that the amalgamation of the two services would lead to a reduction of about 200 officers and a saving of about 17 lakhs of rupees annually, he could say when the Government of India would introduce this reform.—Mr. BUCHANAN replied: There is no fusion of the two medical services in India in time of war; the services work separately—the Royal Army Medical Corps with British field hospitals and the Indian Medical Service with native field hospitals. Suggestions for amalgamation have on several occasions received consideration, but they have not been thought likely to lead to reduction of establishment or expenditure, or, if they did, they might involve a risk of a breakdown of the medical organisation in time of war.

Dr. RUTHERFORD further asked the right honourable gentleman whether he was aware that Indian graduates filled the higher grades of the civil medical service in the Native States to the satisfaction of the Government and the general public; whether the reservation of similar posts in British India for military officers of the Indian Medical Service caused inefficiency and unnecessary expenditure, amounting to about 9 lakhs of rupees; and whether he could say when steps would be taken to alter this system.—Mr. BUCHANAN answered: With a view to the development of the unofficial medical profession in India orders have recently been given which will prevent any increase in the number of officers of the Indian Medical Service employed on civil duties.

Mr. KETTLE asked the Under Secretary of State for India whether the assistant surgeons' branch of the Indian Military Medical Department was recruited exclusively from the Europeans and Eurasians resident in India; whether admission to it was denied to Indians; whether the selected candidates were maintained and educated out of public funds and were afterwards furnished with public employment at a higher scale of salary than that of the civil assistant surgeons; and whether he proposed to reform the system in any way.—Mr. BUCHANAN said in reply: The facts are as stated by the honourable Member. The difference in rates of pay is not, however, very considerable, being confined to the highest grade. I may explain that military assistant surgeons are recruited for service in European military hospitals both in peace and war. The general question of the medical profession in India is under consideration of the Secretary of State.

WEDNESDAY, MARCH 3RD.

The Notification of Infectious Diseases.

Mr. TYSON WILSON asked the President of the Local Government Board whether he could state under their separate headings the number of infectious diseases that it was compulsory to notify and that were notified in England and Wales during 1908, with the number of deaths that occurred from each disease.—Mr. BURNS furnished the following written reply: The information obtained by the Local Government Board on this subject relates to London and 256 boroughs and urban districts in England and Wales. Particulars with respect to the year 1908 are being collected but the returns are not at present complete. The information obtained as regards the year 1907 is summarised on p. 92 of the last annual report of the Board.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BENSON, C. T. V., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

BODY, HENRY MARTEN, M.R.C.S., L.S.A., has been reappointed Medical Officer of Health of Crediton (Devon).

CHAMBERLAIN, DURIE AVERY, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health by the Stratton (Cornwall) Rural District Council.

CHEADLE, B. A., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

CORBETT, C. D. H., M.B., B.Ch. Oxon., M.R.C.S., L.R.C.P., has been appointed Resident House Physician at St. Thomas's Hospital.

CROFTON, J. H., M.R.C.S., L.R.C.P., has been appointed Resident House Physician at St. Thomas's Hospital.

DE WESSELOW, O. L. V. S., M.B., B.Ch. Oxon., has been appointed Resident House Physician at St. Thomas's Hospital.

FERGUSSON, N. M., M.B., B.C. Cantab., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

FYFFE, E. L., M.R.C.S., L.R.C.P., has been appointed Resident House Physician at St. Thomas's Hospital.

GIRDLESTONE, G. R., M.B., B.Ch. Oxon., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

GRAHAM-JONES, J. L., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

GRIFFITH, ALBERT EDWARD, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed District Medical Officer by the Westbury-on-Severn (Gloucestershire) Board of Guardians.

GROSVENOR, WILSHAW WILLIAM, M.D. Dub., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Homes for Aged Poor by the Gloucester Board of Guardians.

HAMILTON, GEORGE G., M.B. Edin., F.R.C.S. Eng., has been appointed Consulting Surgeon to the Boscombe and West Hants Hospital.

IRVINE, M. L. C., M.R.C.S., L.R.C.P., has been appointed Resident House Physician at St. Thomas's Hospital.

JOHNSON, W. B., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

MACDONALD, S. G., M.B., B.C. Cantab., has been appointed House Surgeon at St. Thomas's Hospital.

MENNELL, J. B., M.B., B.C. Cantab., has been appointed Casualty Assistant at St. Thomas's Hospital.

SANKEY, C. F. O., M.B., B.S. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

SMYTH, FRANCIS R., M.R.C.S., L.R.C.P. Lond., L.D.S., has been appointed Surgeon to the Victoria Hospital for Children, Chelsea.

SUTHERLAND, JOSEPH R., M.B., Ch.B. Glasg., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Junior Assistant Medical Officer at the Glasgow District Mental Hospital, Woodilee.

WHEELER, J. N., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

WILSON, H. A. F., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

WILSON, H. B., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Assistant at St. Thomas's Hospital.

WITNEY, E. W., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRMINGHAM EAR AND THROAT HOSPITAL, Edmund-street.—House Surgeon. Salary at rate of £70 per annum, with board, lodging, and washing.

BIRMINGHAM, QUEEN'S HOSPITAL.—House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £100 per annum.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Third House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and laundry provided.

BRIXTON DISPENSARY, Water-lane, S.W.—Resident Medical Officer, unmarried. Salary £150 per annum, with apartments, attendance, coal, and gas.

BURSLEM EDUCATION COMMITTEE.—Doctor (female). Salary £200 per annum, rising to £250.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon. Salary £70 per annum.

CARDIFF, ROYAL HAMADRYAD SEAMEN'S HOSPITAL.—Assistant Medical Officer. Salary £60 per annum and fees.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 and £100 per annum, with board, lodging, and washing.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £50 per annum, with board, residence, and washing.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

DERBY COUNTY ASYLUM, Mickleover.—Junior Assistant Medical Officer. Salary £120 per annum, rising to £150, with apartments, board, washing, and attendance.

GATESHEAD DISPENSARY.—Assistant Medical Officer. Salary £180 per annum.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—Senior House Surgeon, Senior House Physician, Junior House Physician, and Two Junior House Surgeons, for six months. Salary of Senior Officers at the rate of £45 per annum and of Junior Officers £35 per annum, with board, lodging, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

HAMPSTEAD GENERAL HOSPITAL.—House Surgeon and House Physician. Salary at rate of £70 per annum, with board and residence.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Junior Resident Medical Officer, unmarried, for six months. Salary £50 per annum, with full board.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Assistant Physician.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, Assistant Casualty Medical Officer, House Surgeon, and House Physician.

KENT AND CANTERBURY HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with board and lodging.

LEEDS GENERAL INFIRMARY.—Locum Tenens for Resident Ophthalmic House Surgeon. Salary £2 2s. a week, with board, residence, and washing.

LEEDS, UNIVERSITY OF, FACULTY OF MEDICINE.—Demonstrator of Toxicology.

LEICESTER INFIRMARY.—Assistant House Surgeon and Assistant House Physician, both for six months. Salaries at rate of £60 per annum, with board, apartments, and washing.

LIVERPOOL, MILL-ROAD INFIRMARY.—Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.

LONDON COUNTY ASYLUM, Horton, Epsom, Surrey.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, apartments, and washing.

LONDON LOCK HOSPITAL (FEMALE).—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

LONDON TEMPERANCE HOSPITAL.—Assistant Resident Medical Officer for six months. Salary at rate of 50 guineas per annum, with board and residence.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Assistant Surgeon. Also House Surgeon (non-resident) for six months. Salary £50 per annum. Also Anæsthetist.

LONDON UNIVERSITY.—Scientific Assistant in Biological Subjects. Salary £75 per annum.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon, all for six months. Salary of two former at rate of £40 per annum, and of two latter at rate of £20 per annum.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance.

NOTTS EDUCATION COMMITTEE.—Assistant School Medical Officer for three months. Salary at rate of £250 per annum and travelling expenses.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist.

ROYAL NAVAL MEDICAL SERVICE.—Examination for 15 Commissions.

ST. LUKE'S HOSPITAL FOR MENTAL DISEASES, Old-street, London.—Clinical Assistant, unmarried, for six months. Board, apartments, and washing provided.

SALFORD ROYAL HOSPITAL.—House Surgeon. Also Junior House Surgeon, both for six months. Salaries £80 and £50 per annum respectively, with board and residence.

SHEFFIELD EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £250, rising to £300 per annum.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.

STOCKPORT EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum, rising to £300.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging. Also Locum Tenens. Salary £3 3s. a week, with board and lodging.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Pathologist. Salary £200 per annum.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £130 per annum, with board, lodging, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

BOTT.—On Feb. 28th, at 59, Cambridge-terrace, Hyde Park, the wife of Percival G. A. Bott, M.B. Lond., F.R.C.S. Edin., of a son.

FLETCHER.—On Feb. 17th, at Haverstock Hill, N.W., the wife of N. Corbet Fletcher, B.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P., of a son.

MURRAY.—On Feb. 26th, at Bloomfield, Claremont, Cape Colony, the wife of Charles Molteno Murray, M.B. Cantab., of a son.

MARRIAGES.

FRANCE—GREIG SMITH.—At St. Andrew's Church, Motihari, Bengal, on Feb. 3rd, by the Rev. R. Yates, William Ashburner, son of the late Charles France, F.R.I.B.A., of Oliver Hill, Horsforth, Yorks, to Eleanor, daughter of the late James Greig Smith, M.A., M.B., F.R.S.E., Professor of Surgery, University College, Bristol.

DEATHS.

BAILLIE.—On Feb. 26th, at N.W. Fever Hospital, Hampstead, James Hamilton Hall Baillie, M.B., B.Ch. (N.Z.), M.R.C.S., L.R.C.P., D.P.H., in his 32nd year.

HORROCKS.—On Feb. 28th, after an operation, aged 56 years, Peter Horrocks, M.D. Lond., F.R.C.P. Lond., Consulting Obstetric Physician to Guy's Hospital, seventh son of the late George Horrocks of Farnworth, near Bolton, 42, Brook-street, W. Interred Norwood Cemetery, March 4th, 1909.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL MATTERS IN NORTHERN NIGERIA.

Sir E. P. C. Girouard, Governor of Northern Nigeria, in his report for 1907-08 to the Colonial Secretary states that the expenditure upon the medical service is increasing slowly year by year in order to cope with the requirements of the Protectorate. This is more particularly, he insists, one of the departments which, though entirely non-revenue earning, cannot be allowed to suffer from want of necessary funds. The expenditure on the medical department for 1905-06 was £27,838, for 1906-07 £29,294, and for 1907-08 could not be increased beyond the figure £29,905. For 1908-09, owing to economies elsewhere, the estimate has been increased to £30,768—none too much in view of the heavy responsibilities thrown on the department by the initiation of the Baro-Kano railway works. The health on these works has been very good to date; the medical arrangements have been uniformly good, but will require strengthening as to numbers of staff and improvement of hospitals. From the report for the year 1907 of the acting principal medical officer, Mr. J. P. Fagan, the Governor makes the following, amongst other, extracts: The average number of Europeans resident in the Protectorate during the year was 424; the deaths numbered seven, and the number of cases invalided was 50. Comparatively speaking, both rates are gradually diminishing and may be considered fairly satisfactory. A fact to be remembered is that all the Europeans serving in the country, official or non-official, have to be pronounced fit for service before leaving England. The native population is approximately given as 7,000,000. Malarial fevers were prevalent during the year, the highest incidence being in October with 88 cases, the next highest May with 79 cases. These months mark the beginning and the end of the wet season, which, by experience, are considered the most unhealthy periods of the year. The greatest number of cases of blackwater fever occurred when malaria was highest—viz., in October. The practical measures taken to combat malaria seem to have a corresponding preventive effect on the incidence of blackwater fever. No cases of sleeping sickness were recorded amongst Europeans, but amongst natives there were four cases with three deaths, as against three cases and one death in 1906. In the early part of the year a medical officer (Mr. K. McGahey) was detailed to report on the treatment adopted by a native medicine man in the district of Loko, on the Benue river. Mr. McGahey found 12 cases under treatment, three of which were not sleeping sickness at all. The remaining nine cases were, however, well marked microscopically and clinically. The treatment consisted in incising the enlarged glands by five or six deep cuts at right angles to, and parallel to, the longitudinal axis of each gland. Bleeding was freely encouraged; the patient was then given some native decoction to drink and the wound was dressed after the native fashion with leaves and dirt. The cases under notice went from bad to worse and no continued improvement was reported. The native medicine man's pathognomonic sign for sleeping sickness was enlargement of the cervical lymphatic glands. From the number of natives with characteristic scars noticed around Loko, his practice must have been extensive, but whether they were recoveries from the disease as a result of such treatment is very doubtful. Generally speaking, the natives say that sleeping sickness is nearly always fatal and is infectious. We have no evidence to prove the occurrence of epidemics such as occur in Uganda and Central Africa. The valley of the Benue is the most likely starting point of an epidemic if it does come. Specimens of Glossina palpalis and Glossina tachinoides have been collected in this area. There were 89 cases of yaws in 1907, as against 187 in 1906. The general sanitary condition of the Protectorate is as good as can be expected; it is yearly improving, and obtains the constant and unremitting attention of the authorities. The conditions of life continue to improve with the aid of such reforms as better dwelling quarters, water condensers at stations where the water-supply was not of good quality, better roads and rest-houses, sanitary supervision, and instruction given in the management of native towns, &c. The routine sanitary work throughout the Protectorate includes all the practical known means of combating tropical diseases. The report of successful vaccinations for the year is unsatisfactory, the number being 1423 as against 2447 in 1906. Several reasons can be urged for this reduction, as (1) the natives in Government employ, and those more or less in touch with its officers, are almost all by this time vaccinated; (2) loss of activity in the vaccine lymph on its arrival at our more distant stations—this can be readily understood when it is borne in mind that a period of three months may elapse before the completion of its journey from England; (3) the Mahommedans object to the method known as arm to arm vaccination, which—where the lymph supply is limited—is the only means of performing on large numbers; and (4) the pagans object in a manner which prevents their inclusion in the category of passive resisters. Time, patience, and experience will no doubt overcome the native fears, suspicions, and prejudices. To cope with the lymph difficulty a trial is being made with the powdered lymph in place of that supplied in tubes. The powdered preparation seems to stand long journeys and excessive heat in such a way as to give hopes that a solution of the lymph question has been arrived at. A case of rabies in a dog was reported from the Maifoni district, and two European officers who were bitten proceeded to Paris for the Pasteur treatment. One seldom or never sees a mad dog in these parts, but the natives are well acquainted with the disease and state that they always kill a dog on the slightest symptoms of madness.

WANTED—SUGGESTIONS FOR TREATMENT.

To the Editor of THE LANCET.

SIR,—Having seen a letter in THE LANCET of Feb. 20th from "Perplexed" relative to a case about which he would like some suggestions as to treatment, I think my own case might not be without value to him. It is as follows. About a year ago I had severe periodic pain in my left temple which no outward applications would relieve. It commenced at about 8 o'clock each morning before getting out of bed, and got worse till the middle of the day until it was quite unbearable, when it gradually eased off. I had another medical man to see me, who was afraid that there was periostitis; but I had tried everything I could think of when he prescribed bromide of sodium in medium doses with phenacetin and spirit of chloroform three times a day before food, and Donovan's solution, also in moderate doses, twice daily after food. The effects were most striking, the pain commenced one hour later each morning till at last I was quite free from it. I believe myself that it was true intermittent neuralgia, and that the arsenic acted as an antiperiodic.

I am, Sir, yours faithfully,

Feb. 22nd, 1909. L.R.C.P. Edin.

A SAFETY CLINICAL THERMOMETER CASE.

WE have received from Mr. G. H. Zeal, of Turnmill-street, London, E.C., whose ingenious Repello clinical thermometer we noticed in our issue of Oct. 4th, 1902, p. 966, a specimen of his patent safety clip case for clinical thermometers. Everyone knows how liable a clinical thermometer is to fall out of the pocket in the act of stooping, with the result of a breakage. Mr. Zeal's case is fitted with a clip attachment similar to that in common use on a fountain pen. The case is thus securely fastened to the pocket and the risk of breaking the thermometer is averted.

Major D. G. Marshall, I.M.S.—Our correspondent is correct in his calculation, but the pills were, as a rule, distributed gratis. When they were sold they were sold at 40 for anna, "or," in the words of the pamphlet, at "one-fourth the cost price."

Postman's Knock.—We do not think that the custom alluded to by our correspondent is the cause of any widespread nuisance. For any invalid the annoyance can be obviated by tying up the knocker.

ERRATUM.—In the letter from Mr. Jackson Clarke on Congenital Dislocation of the Hip-joint which appeared in THE LANCET of Feb. 27th, p. 649, the figures 1905-06 should read 1903-06.—ED. L.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

TUESDAY.

SURGICAL SECTION (Hon. Secretaries—Herbert F. Waterhouse, Walter G. Spencer): at 5.30 P.M.

Alban Doran: Urachal Cyst simulating Appendicular Abscess; Arrested Development of Genital Tract; with Notes on Recently Reported Cases of Urachal Cysts.

Mr. Herbert T. Herring: The Application of Continuous Suction in Surgery.

THURSDAY.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION (Hon. Secretaries—H. Beckett-Overy, William J. Gow): at 7.45 P.M.

Specimens:

Mrs. Stanley Boyd: A Necro-biotic Fibroid.

Dr. Rivers Pollock: Dermoid Cysts of the Ovaries.

Dr. W. Giffard Naah: (1) Parovarian Cyst with Torsion of the Pedicle; (2) Hæmorrhage into Great Omentum due to a Slight Injury in a Patient with Multiple Myomata of the Uterus; (3) Hæmorrhage into a Sarcoma of the Ovary causing Symptoms Suggestive of Torsion.

Dr. Russell Andrews: (1) Twin Pregnancy in a Fallopian Tube; (2) Carcinoma of Vagina, Removal of Uterus and whole of Vagina.

Dr. A. H. N. Lewers: A Fibroid Tumour spontaneously expelled from the Uterus Seven and a Half Weeks after Delivery.

Dr. H. R. Spencer: (1) An Ovarian Fibroid Incarcerated in the Pelvis, Cæsarian Section and Ovariotomy at Term; (2) Bilateral Ovarian Fibroids removed during Pregnancy.

Short Communications:

Dr. Drummond Maxwell: Notes on a Fatal Case of Toxic Vomiting of Pregnancy.

Dr. F. E. Taylor and Dr. W. E. Fisher: A Case of Primary Ovarian Actinomycosis.

FRIDAY.

CLINICAL SECTION (Hon. Secretaries: Raymond Johnson, H. D. Rolleston): at 8 P.M.

Cases:

Mr. James Sherren: Cases of Nerve Injury from the Point of View of Treatment.

Mr. C. H. Fagge: (1) Two Cases of Post-operative Facial Paralysis, Facial-hypoglossal Grafting; (2) Case of Inflammatory Facial Paralysis, Facial-accessory Anastomosis.

Mr. A. H. Tubby: Nerve-grafting.

Mr. Sargent: Case of Nerve-root Grafting.

Mr. W. McAdam Eccles: Charcot's Disease of the Ankle.

Mr. A. Carless: Vicious Circle and Vomiting after Gastro-enterostomy cured by Entero-anastomosis.

Major C. G. Spencer, R.A.M.C.: Sarcoma treated by Coley's Fluid.

Dr. Macnaughton-Jones: Cancerous Tumour of the Spinal Meninges Invading the Cord and causing Paraplegia, Secondary to Mammary Carcinoma.

Dr. F. H. Hawkins: Lymphadenoma with varying Jaundice.

Mr. L. McGavin: Perineal Hernia.

Short Paper (at 9.40 P.M.):

Dr. A. E. Garrod: Uræmia simulating Meningitis.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Mr. G. Templeton: Gastric Dilatation associated with Extreme Cyanosis.—Mr. L. B. Rawling: Points in the Surgical Treatment of Fractures of the Bone of the Skull.

CHELSEA CLINICAL SOCIETY, Chelsea Dispensary, Manor-street, King's-road, S.W.

TUESDAY.—8.30 P.M., Annual Clinical Debate:—On the Diagnosis and Treatment of Tuberculous Glands in the Neck (opened by Dr. L. C. F. Ritchie: On the Differential Diagnosis and Inoculation Treatment of Tuberculous Glands in the Neck and Dr. A. H. Pirie: On the Treatment of Tuberculous Glands by X Rays (with lantern demonstrations and cases)). Followed by a general Discussion.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury-square, W.C.

TUESDAY.—8 P.M., Dr. A. Harden: The Relations to Pharmacology of some Recent Advances in Biological Chemistry.

MEDICAL OFFICERS OF SCHOOLS' ASSOCIATION, 11, Chandos-street, W.

WEDNESDAY.—3.30 P.M., Discussion on Ought School Boys to be allowed to Compete in Flat and Cross Country Races of more than One Mile in Length? (opened by Dr. W. Collier).

UNITED SERVICES MEDICAL SOCIETY, Royal Army Medical College, Millbank, S.W.

WEDNESDAY.—8.30 P.M., Major Beveridge, R.A.M.C.: Demonstration on Some Recent Methods of Sewage Analysis.—Mr. B. Harman: Diaphragm Test for Vision.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—5.30 P.M., Adjourned Discussion on Dr. Buckley's paper on Intestinal Lavage on the Plombières System (re-opened by Dr. Mantle (Harrogate)).—Mr. L. Mummery: The Treatment of Severe Cases of Chronic Colitis.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Board Room of the Great Northern Central Hospital, Holloway-road, N.

THURSDAY.—9 P.M., Dr. T. W. Eden: The Obstetric Forceps—When and Where to Use Them.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM, 11, Chandos-street, Cavendish-square, W.

THURSDAY.—8 P.M., Card Cases will be shown by Dr. G. Carpenter, Dr. J. Rowan, and others. 8.30 P.M., Mr. E. T. Collins: Congenital Anterior Staphyloma.—Mr. E. Nettleship: Some New Pedigrees of Eye Diseases.

FRIDAY.—9 P.M., Special Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, WEDNESDAY, AND FRIDAY.—5 P.M., Prof. A. Keith: Malformations of the Heart. (Hunterian Lectures.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Dr. R. T. Hewlett: Disinfection and Disinfectants. (Milroy Lecture.)

THURSDAY.—5 P.M., Dr. A. E. Russell: Some Disorders of the Cerebral Circulation and their Clinical Manifestations. (Goulstonian Lecture).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. W. Fox: Clinique (Skin). 5.15 P.M., Lecture:—Mr. E. Clarke: The Fundus Oculi (with lantern slides).

TUESDAY.—4 P.M., Dr. W. Harris: Clinique (Medical). 5.15 P.M., Lecture:—Dr. F. J. McCann: Pruritus Vulvæ, its Causes and Treatment.

WEDNESDAY.—4 P.M., Mr. M. Collier: Clinique (Surgical). 5.15 P.M. Lecture:—Mr. R. H. J. Swan: Vesical Tuberculosis.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. J. M. H. MacLeod: Bullous Eruptions.

FRIDAY.—4 P.M., Dr. D. Grant: Clinique (Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathologist: Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Pritchard: Clinical Pathology.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Bidwell: Ulceration of the Cæcum.

WEDNESDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Medicine.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Ll. Williams: Diagnosis of Swellings of the Jaws. In Adults.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Lecture:—Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. S. Taylor: The Treatment of Constipation.

SATURDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson); X Rays. 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical Out-patient (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles). 4.30 P.M., Lecture:—Dr. R. M. Leslie: Modern Views on Heredity.

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. H. W. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Dr. G. G. Macdonald: The Mechanism of Infection.

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations (Mr. W. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. Lawrence: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 3.15 P.M., Special Lecture:—Mr. Turner: Difficulties in Cases of Abdominal Diagnosis.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. R. Wells: Mitral Disease.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye. 3.30 P.M., Special Lecture:—Mr. Cargill: Papillitis.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.

TUESDAY.—5 P.M., Clinical Demonstration: Dr. P. Stewart.

WEDNESDAY.—3 P.M., Clinical Demonstration: Dr. F. Palmer.

THURSDAY.—3 P.M., Clinical Demonstration: Dr. T. D. Savill.

FRIDAY.—5 P.M., Clinical Demonstration: Dr. E. Macnamara.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—UI-Erythema: I., Centrifugum; II., Telangiectic; III., Ophryogenes.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. Tooth.

FRIDAY.—3.30 P.M., Clinical Lecture:—Mr. Armour: Symptom and Treatment of Cervical Ribs.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY AND FRIDAY.—3.45 P.M., Lecture:—Dr. A. Wylie: Larynx.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.

WEDNESDAY.—5 P.M., Dr. W. H. Kelson: Surgical Landmarks of Nose and Throat.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (9th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (10th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (11th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.)., Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (13th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospital operations are performed daily.

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THE INDEX TO THE LANCET.

The Index and Title-page to Vol. II. of 1908, which was completed with the issue of Dec. 26th, were given in THE LANCET of Jan. 2nd, 1909.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 4th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb. 26	30·31	N.E.	...	46	37	32	33	34	Overcast
,, 27	30·16	N.E.	...	47	36	30	32	32	Cloudy
,, 28	29·89	N.E.	0·01	54	34	32	34	34	Snowing
Mar. 1	29·77	E.	0·21	41	35	30	31	32	Snowing
,, 2	29·49	S.W.	...	47	37	21	...	28	Overcast
,, 3	29·19	W.	0·38	35	34	28	...	30	Overcast
,, 4	29·39	N.	0·17	61	35	29	...	31	Cloudy

During the week marked copies of the following newspapers have been received:—*Literary Digest, Public Opinion, Bradford Observer, Standard, Durham Advertiser, Manchester Evening News, Liverpool Courier, Oldham Standard, Manchester Dispatch, Birmingham Mail, Weekly Times and Echo, Cardiff Mail, Sheffield Independent, Scotsman, Liverpool Daily Post, Wimbledon Gazette, &c.*

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